SEQUENCE LISTING

<110> I.N.S.E.R.M.
MAX-PLANCK-GESELLSCHAFT ZUR FORDERUNG DES WISSENSC

<120> Novel Neisseria meningitidis compounds and
anti-infection applications thereof

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<170> PatentIn Ver. 2.1

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20 25 30

Gln Ser Ser Ser Ser Ala Pro Ala Ala Pro Ala Glu Leu Asn Glu Gly
35 40 45

Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly
50 55 60

Lys Ile Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
65 70 75 80

His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp
85 90 95

Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro
100 105 110

Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys
115 120 125

Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu
130 135 140

Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe
145 150 155 160

Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Pro Glu Ser Gln Ala
165 170 175

Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly
180 185 190

Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp
195 200 205

Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg
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Glu Glu Gln Lys Lys Pro Gln
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20 25 30

Gln Ser Ser Ser Ser Ala Pro Ala Ala Pro Ala Glu Leu Asn Glu Gly
35 40 45

Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly
50 55 60

Lys Ile Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
65 70 75 80

His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp
85 90 95

Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro
100 105 110

Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys
115 120 125

Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu
130 135 140

Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe
145 150 155 160

Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Pro Glu Ser Gln Ala

165 170 175

Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly
180 185 190

Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp
195 200 205

Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg
210 215 220

Glu Glu Gln Lys Lys Pro Gln
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<213> Neisseria meningitidis

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20 25 30

Gln Ser Ser Ser Ser Ala Pro Ala Ala Pro Ala Glu Leu Asn Glu Gly
35 40 45

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Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly
     50                  55                  60

Lys Ile Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
 65                  70                  75                  80

His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp
                 85                  90                  95

Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro
            100                 105                 110

Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys
        115                 120                 125

Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu
    130                 135                 140

Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe
145                 150                 155                 160

Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Pro Glu Ser Gln Ala
                165                 170                 175

Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly
            180                 185                 190

Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp
        195                 200                 205

Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg
    210                 215                 220

Glu Glu Gln Lys Lys Pro Gln
225                 230
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<213> Neisseria meningitidis

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20 25 30

Gln Ser Ser Ser Ser Ala Pro Ala Ala Pro Ala Glu Leu Asn Glu Gly
35 40 45

Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly
50 55 60

Lys Ile Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
65 70 75 80

His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp
85 90 95

Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro
100 105 110

Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys
115 120 125

Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu
130 135 140

Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe
145 150 155 160

Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Pro Glu Ser Gln Ala
165 170 175

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Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly
            180                 185                 190

Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp
        195                 200                 205

Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg
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Glu Glu Gln Lys Lys Pro Gln
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<213> Neisseria meningitidis

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            20                  25                  30

Gln Ser Ser Ser Ser Ala Pro Ala Ala Pro Ala Glu Leu Asn Glu Gly
        35                  40                  45

Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly
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     50                  55                  60

Lys Ile Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
 65                  70                  75                  80

His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp
                 85                  90                  95

Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro
            100                 105                 110

Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys
        115                 120                 125

Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu
    130                 135                 140

Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe
145                 150                 155                 160

Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Pro Glu Ser Gln Ala
                165                 170                 175

Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly
            180                 185                 190

Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp
        195                 200                 205

Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg
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Glu Glu Gln Lys Lys Pro Gln
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<213> Neisseria meningitidis

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20 25 30

Gln Ser Ser Ser Ser Ala Pro Ala Ala Pro Ala Glu Leu Asn Glu Gly
35 40 45

Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly
50 55 60

Lys Ile Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
65 70 75 80

His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp
85 90 95

Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro
100 105 110

Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys
115 120 125

Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu
130 135 140

Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe
145 150 155 160

Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Pro Glu Ser Gln Ala
165 170 175

Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly
180 185 190

Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp
195 200 205

Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg
210 215 220

Glu Glu Gln Lys Lys Pro Gln
225 230

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<213> Neisseria meningitidis

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20 25 30

Gln Ser Ser Ser Ser Ala Pro Ala Ala Pro Ala Glu Leu Asn Glu Gly
35 40 45

Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly
50 55 60

Lys Ile Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
65 70 75 80

His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp
85 90 95

Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro
100 105 110

Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys
115 120 125

Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu
130 135 140

Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe
145 150 155 160

Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Pro Glu Ser Gln Ala
165 170 175

Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly
180 185 190

Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp
195 200 205

Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg
210 215 220

Glu Glu Gln Lys Lys Pro Gln
225 230

<210> 15
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<213> Neisseria meningitidis

<400> 16

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             20                  25                  30

Gln Ser Ser Ser Ser Ala Pro Ala Ala Pro Ala Glu Leu Asn Glu Gly
         35                  40                  45

Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly
     50                  55                  60

Lys Ile Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
 65                  70                  75                  80

His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp
                 85                  90                  95

Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro
            100                 105                 110

Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys
        115                 120                 125

Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu
    130                 135                 140

Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe
145                 150                 155                 160

Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Pro Glu Ser Gln Ala
                165                 170                 175

Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly
            180                 185                 190

Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp
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195 200 205

Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg
210 215 220

Glu Glu Gln Lys Lys Pro Gln
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<213> Neisseria meningitidis

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20 25 30

Gln Ser Ser Ser Ser Ala Pro Ala Ala Pro Ala Glu Leu Asn Glu Gly
35 40 45

Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly
50 55 60

Lys Ile Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
65 70 75 80

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His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp
                 85                  90                  95

Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro
            100                 105                 110

Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys
        115                 120                 125

Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu
    130                 135                 140

Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe
145                 150                 155                 160

Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Pro Glu Ser Gln Ala
                165                 170                 175

Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly
            180                 185                 190

Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp
        195                 200                 205

Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg
    210                 215                 220

Glu Glu Gln Lys Lys Pro Gln
225                 230
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<210> 19
<211> 696
<212> DNA
<213> Neisseria meningitidis

<400> 19
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gcccctgctg agttgaacga aggtgtgaac tacactgtat tgtctacgcc tattccgcaa 180
cagcaggccg gtaaaatcga agtattggaa tttttcggct acttctgccc gcattgcgcc 240
catcttgagc cggtcttgag cgagcacatc aaaacgttta aagacgatac ctatatgcgc 300
cgggagcatg tcgtgtgggg tgatgaaatg aaacctttgg cacgtttggc ggccgcagtg 360
gaaatggccg gtgaatcaga taaagccaac agccatattt tcgatgcgat ggttaatcaa 420
aaaatcaatc tggccgatac cgataccctg aaaaaatggc tgtccgagca aacagcgttt 480
gacggcaaaa aagtattggc tgcatttgag gctcctgaaa gccaagcgcg tgcggctcaa 540
atggaagagt tgaccaataa attccaaatc agcggcacac cgactgtgat tgtcggcggc 600

aaataccaag ttgaatttaa agactggcag tctggtatga ccacgattga ccagttggtg 660
gataaagtac gcgaagagca gaaaaagccg caataa 696

<210> 20
<211> 231
<212> PRT
<213> Neisseria meningitidis

<400> 20

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Met Lys Leu Lys Thr Leu Ala Leu Thr Ser Leu Thr Leu Leu Ala Leu
  1               5                  10                  15

Ala Ala Cys Ser Lys Gln Ala Glu Thr Ser Val Pro Ala Asp Ser Ala
             20                  25                  30

Gln Ser Ser Ser Ser Ala Pro Ala Ala Pro Ala Glu Leu Asn Glu Gly
         35                  40                  45

Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly
     50                  55                  60

Lys Ile Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
 65                  70                  75                  80

His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp
                 85                  90                  95

Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro
            100                 105                 110

Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys
        115                 120                 125

Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu
    130                 135                 140

Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe
145                 150                 155                 160

Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Pro Glu Ser Gln Ala
                165                 170                 175

Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly
            180                 185                 190

Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp
        195                 200                 205
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Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg
210 215 220

Glu Glu Gln Lys Lys Pro Gln
225 230

<210> 21
<211> 696
<212> DNA
<213> Neisseria meningitidis

<400> 21
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gccccagccc cattgaccga aggcgtgaac tacactgtat tgtccacgcc tatcccgcaa 180
cagcaggccg gcaaagtcga agtcttggaa tttttcggct acttctgccc gcattgcgcc 240
catcttgagc cggtcttgag cgagcacatc aaaacgttta aagacgatac ctatatgcgc 300
cgggagcatg tcgtgtgggg tgatgaaatg aaacctttgg cacgtttggc ggccgcagtg 360
gaaatggccg gtgaatcaga taaagccaac agccatattt tcgatgcgat ggttaatcaa 420
aaaatcaatc tggccgatac cgataccctg aaaaaatggc tgtccgagca aacagcgttt 480
gacggcaaaa aagtattggc tgcatttgag gcttctgaaa gccaagcgcg tgcggctcaa 540
atggaagagt tgaccaataa attccaaatc agcggcacac cgactgtgat cgtcggcggc 600
aaataccaag ttgaatttaa agactggcag tccggtatga ccacgattga ccagttggtg 660
gataaagtac gcgaagagca gaaaaagccg caataa 696

<210> 22
<211> 231
<212> PRT
<213> Neisseria meningitidis

<400> 22
Met Lys Leu Lys Thr Leu Ala Leu Thr Ser Leu Thr Leu Leu Ala Leu
1 5 10 15

Ala Ala Cys Ser Lys Gln Ala Glu Thr Ser Val Pro Ala Asp Ser Val
20 25 30

Gln Ser Ser Ser Ser Ala Pro Ala Ala Pro Ala Pro Leu Thr Glu Gly
35 40 45

Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly
50 55 60

Lys Val Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
65 70 75 80

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His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp
                 85                  90                  95

Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro
            100                 105                 110

Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys
        115                 120                 125

Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu
    130                 135                 140

Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe
145                 150                 155                 160

Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Ser Glu Ser Gln Ala
                165                 170                 175

Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly
            180                 185                 190

Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp
        195                 200                 205

Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg
    210                 215                 220

Glu Glu Gln Lys Lys Pro Gln
225                 230
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<210> 23
<211> 696
<212> DNA
<213> Neisseria meningitidis

<400> 23
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gccccagccc cattgaccga aggcgtgaac tacactgtat tgtccacgcc tatcccgcaa 180
cagcaggccg gcaaagtcga agtcttggaa tttttcggct acttctgccc gcattgcgcc 240
catcttgagc cggtcttgag cgagcacatc aaaacgttta aagacgatac ctatatgcgc 300
cgggagcatg tcgtgtgggg tgatgaaatg aaacctttgg cacgtttggc ggccgcagtg 360
gaaatggccg gtgaatcaga taaagccaac agccatattt tcgatgcgat ggttaatcaa 420
aaaatcaatc tggccgatac cgataccctg aaaaaatggc tgtccgagca aacagcgttt 480
gacggcaaaa aagtattggc tgcatttgag gcttctgaaa gccaagcgcg tgcggctcaa 540
atggaagagt tgaccaataa attccaaatc agcggcacac cgactgtgat cgtcggcggc 600
aaataccaag ttgaatttaa agactggcag tccggtatga ccacgattga ccagttggtg 660

gataaagtac gcgaagagca gaaaaagccg caataa 696

<210> 24
<211> 231
<212> PRT
<213> Neisseria meningitidis

<400> 24

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Met Lys Leu Lys Thr Leu Ala Leu Thr Ser Leu Thr Leu Leu Ala Leu
  1               5                  10                  15

Ala Ala Cys Ser Lys Gln Ala Glu Thr Ser Val Pro Ala Asp Ser Val
             20                  25                  30

Gln Ser Ser Ser Ser Ala Pro Ala Ala Pro Ala Pro Leu Thr Glu Gly
         35                  40                  45

Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly
     50                  55                  60

Lys Val Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
 65                  70                  75                  80

His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp
                 85                  90                  95

Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro
            100                 105                 110

Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys
        115                 120                 125

Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu
    130                 135                 140

Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe
145                 150                 155                 160

Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Ser Glu Ser Gln Ala
                165                 170                 175

Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly
            180                 185                 190

Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp
        195                 200                 205

Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg
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210 215 220

Glu Glu Gln Lys Lys Pro Gln
225 230

<210> 25
<211> 696
<212> DNA
<213> Neisseria meningitidis

<400> 25
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aaacaggctg aaaccagcgt tccggcagac agcgtccaaa gcagctcatc tgctccggca 120
gccccagccc cattgaccga aggcgtgaac tacactgtat tgtccacgcc tatcccgcaa 180
cagcaggccg gcaaagtcga agtcttggaa tttttcggct acttctgccc gcattgcgcc 240
catcttgagc cggtcttgag cgagcacatc aaaacgttta aagacgatac ctatatgcgc 300
cgggagcatg tcgtgtgggg tgatgaaatg aaacctttgg cacgtttggc ggccgcagtg 360
gaaatggccg gtgaatcaga taaagccaac agccatattt tcgatgcgat ggttaatcaa 420
aaaatcaatc tggccgatac cgataccctg aaaaaatggc tgtccgagca aacagcgttt 480
gacggcaaaa aagtattggc tgcatttgag gctcctgaaa gccaagcgcg tgcggctcaa 540
atggaagagt tgaccaataa attccaaatc agcggcacac cgactgtgat tgtcggcggc 600
aaataccaag ttgaatttaa agactggcag tccggtatga ccacgattga ccagttggtg 660
gataaagtac gcgaagagca gaaaaagccg caataa 696

<210> 26
<211> 231
<212> PRT
<213> Neisseria meningitidis

<400> 26
Met Lys Leu Lys Thr Leu Ala Leu Thr Ser Leu Thr Leu Leu Ala Leu
1 5 10 15

Ala Ala Cys Ser Lys Gln Ala Glu Thr Ser Val Pro Ala Asp Ser Val
20 25 30

Gln Ser Ser Ser Ser Ala Pro Ala Ala Pro Ala Pro Leu Thr Glu Gly
35 40 45

Val Asn Tyr Thr Val Leu Ser Thr Pro Ile Pro Gln Gln Gln Ala Gly
50 55 60

Lys Val Glu Val Leu Glu Phe Phe Gly Tyr Phe Cys Pro His Cys Ala
65 70 75 80

His Leu Glu Pro Val Leu Ser Glu His Ile Lys Thr Phe Lys Asp Asp
85 90 95

Thr Tyr Met Arg Arg Glu His Val Val Trp Gly Asp Glu Met Lys Pro
100 105 110

Leu Ala Arg Leu Ala Ala Ala Val Glu Met Ala Gly Glu Ser Asp Lys
115 120 125

Ala Asn Ser His Ile Phe Asp Ala Met Val Asn Gln Lys Ile Asn Leu
130 135 140

Ala Asp Thr Asp Thr Leu Lys Lys Trp Leu Ser Glu Gln Thr Ala Phe
145 150 155 160

Asp Gly Lys Lys Val Leu Ala Ala Phe Glu Ala Pro Glu Ser Gln Ala
165 170 175

Arg Ala Ala Gln Met Glu Glu Leu Thr Asn Lys Phe Gln Ile Ser Gly
180 185 190

Thr Pro Thr Val Ile Val Gly Gly Lys Tyr Gln Val Glu Phe Lys Asp
195 200 205

Trp Gln Ser Gly Met Thr Thr Ile Asp Gln Leu Val Asp Lys Val Arg
210 215 220

Glu Glu Gln Lys Lys Pro Gln
225 230

<210> 27
<211> 1047
<212> DNA
<213> Neisseria meningitidis

<400> 27
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cgatattcta atcaattgct tgaccgatat caaaaaaatc caagtagttt aaataatcaa 180
gaaaaaaata ttcttgcata ttttattaac caaacctctg gaggtaacac agcttgggca 240
gcttcgatac tgaaaacgcc ccagtcaatg ggtaatctca ctattccttc caaagatatt 300
aataacacct tatcgaaagc ctatcaaaca ttgagtcgtt atgattcttt tgattacaaa 360
tcagctgttg ccgcacaacc tgcactttac ttattaaacg gaccgcttgg cttcagtgtc 420
aaagcagcta ctgtggcagc aggaggatat aacattggac agggagcgaa agcaatctct 480
aatggagaat atctgcatgg tacagttcag gttgttaatg gcacattgat ggttgcagga 540
tctgtatctg cacaggctgc aatatcggcc aagcctgcac ctgttacccg ttatctgagc 600
aatgacagtg ctcctgcttt aagacaagct ttaactgctg aaagccagag aatccgcatg 660
aaactgccgg aagagtatcg acaaataggg aatcttgcga tagcaaaaat tgatgttaaa 720
ggattaccgc aaaggatgga agcatttagt tctttccaaa aaggggaaca tggatttatt 780

tcgttacctg aaacaaaaat ttttaaacct atatctgttg ataaatatca taatattgcc 840
tctcctccta gaggaacatt aagaaatata gatggagaat ataaattact tgaaactata 900
gcacagcaac tcggaaataa tcgtaatgta tcaggtagaa ttgatctatt tacagaatta 960
aaggcctgtc aatcttgcag caatgttatt ttagagttta gaaatcgcta tccaaatatt 1020
caattaaata tttttacagg aaaatag 1047

<210> 28
<211> 348
<212> PRT
<213> Neisseria meningitidis

<400> 28
Glu Tyr Ala Leu Arg Glu Lys Leu Ile Lys Lys Ala Lys Gly Lys Gly
1 5 10 15

Leu Leu Ser Leu Asp Trp Gly Ser Leu Thr Glu Gln Glu Ala Arg Gln
20 25 30

Phe Ile Tyr Leu Ile Glu Lys Asp Arg Tyr Ser Asn Gln Leu Leu Asp
35 40 45

Arg Tyr Gln Lys Asn Pro Ser Ser Leu Asn Asn Gln Glu Lys Asn Ile
50 55 60

Leu Ala Tyr Phe Ile Asn Gln Thr Ser Gly Gly Asn Thr Ala Trp Ala
65 70 75 80

Ala Ser Ile Leu Lys Thr Pro Gln Ser Met Gly Asn Leu Thr Ile Pro
85 90 95

Ser Lys Asp Ile Asn Asn Thr Leu Ser Lys Ala Tyr Gln Thr Leu Ser
100 105 110

Arg Tyr Asp Ser Phe Asp Tyr Lys Ser Ala Val Ala Ala Gln Pro Ala
115 120 125

Leu Tyr Leu Leu Asn Gly Pro Leu Gly Phe Ser Val Lys Ala Ala Thr
130 135 140

Val Ala Ala Gly Gly Tyr Asn Ile Gly Gln Gly Ala Lys Ala Ile Ser
145 150 155 160

Asn Gly Glu Tyr Leu His Gly Thr Val Gln Val Val Asn Gly Thr Leu
165 170 175

Met Val Ala Gly Ser Val Ser Ala Gln Ala Ala Ile Ser Ala Lys Pro
180 185 190

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Ala Pro Val Thr Arg Tyr Leu Ser Asn Asp Ser Ala Pro Ala Leu Arg
        195                 200                 205

Gln Ala Leu Thr Ala Glu Ser Gln Arg Ile Arg Met Lys Leu Pro Glu
    210                 215                 220

Glu Tyr Arg Gln Ile Gly Asn Leu Ala Ile Ala Lys Ile Asp Val Lys
225                 230                 235                 240

Gly Leu Pro Gln Arg Met Glu Ala Phe Ser Ser Phe Gln Lys Gly Glu
                245                 250                 255

His Gly Phe Ile Ser Leu Pro Glu Thr Lys Ile Phe Lys Pro Ile Ser
            260                 265                 270

Val Asp Lys Tyr His Asn Ile Ala Ser Pro Pro Arg Gly Thr Leu Arg
        275                 280                 285

Asn Ile Asp Gly Glu Tyr Lys Leu Leu Glu Thr Ile Ala Gln Gln Leu
    290                 295                 300

Gly Asn Asn Arg Asn Val Ser Gly Arg Ile Asp Leu Phe Thr Glu Leu
305                 310                 315                 320

Lys Ala Cys Gln Ser Cys Ser Asn Val Ile Leu Glu Phe Arg Asn Arg
                325                 330                 335

Tyr Pro Asn Ile Gln Leu Asn Ile Phe Thr Gly Lys
            340                 345
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<210> 29
<211> 2112
<212> DNA
<213> Neisseria meningitidis

<400> 29

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gtggtcggac agtccgacac cagcgtactc aaaggctaca tcaactacga cgaagccgcc 180
gttacccgca acggacagct catcaaagaa acgccgcaaa ccatcgatac gctcaatatc 240
cagaaaaaca aaaattacgg cacgaacgat ttgagttcca tcctcgaagg caatgccggc 300
atcgacgccg cctacgatat gcgcggcgaa agcattttcc tgcgcggctt tcaagccgac 360
gcatctgata tttaccgcga cggcgtacgc gaaagcgggc aggtgcgccg tagcaccgcc 420
aacatcgagc gcgtggaaat cctgaaaggt ccgtcctccg tgctttatgg gcgtaccaac 480
ggcggcggtg tcatcaacat ggtcagcaaa tacgccaact tcaaacaaag ccgtaatatc 540
ggtacggttt atggttcgtg ggcaaaccgc agcctgaata tggacatcaa cgaagtgctg 600
aacaaaaacg tcgccatccg tctcaccggc gaagtcgggc gcgccaattc gttccgcagc 660
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ggcatagaca gcaaaaatgt catggtttcg cccagcatta ccgtcaaact cgacaacggc 720
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accaagtccg tgtacgaccg cttcggactg ccttaccgca tggggttcgc ccaccggaac 840
gattttgtca aagacaagct gcaagtttgg cgttccgacc ttgaatacgc cttcaacgac 900
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aacaaaaccc tgtcgtccaa cttaacgctc aacggcgact acaccatcgg ccgttttgaa 1080
aaccacctga ccgtaggcat ggattacagc cgcgaacacc gcaacccgac attgggtttc 1140
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agattgcagc ctattctgac ccaaaaccgc cacaaagccg actcctacgg catctttgtg 1260
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ttcagcccca acatcggcgc agtgtggaac atcaatcccg tccacacact ttacgcctcg 1440
tataacaaag gcttcgcgcc ttatggcgga cgcggcggct atttgagcat cgatacgttg 1500
tcttccgccg tgttcaacgc cgaccccgag tacacccgcc aatacgaaac cggcgtgaaa 1560
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ctgcgcggtt cgttgggcgt gatgcaggcg aaagtcgttg aagacaaaga aaatcccgac 1800
cgagtgggca tccatttgaa taacaccagc aacgttaccg gcaacctgtt tttccgttat 1860
accccgaccg aaaacctcta cggcgaaatc ggcgtaaccg gtacaggcaa acgctacggt 1920
tacgactcaa gaaataaaga agtgactacg cttccaggct ttgcccgagt tgatgccatg 1980
cttggctgga accataaaaa tgttaacgtt acctttgccg cagccaatct gttcaatcaa 2040
aaatattggc gttcggactc tatgccgggt aatccgcgcg gctatactgc ccgggtaaat 2100
taccgtttct ga 2112

<210> 30
<211> 703
<212> PRT
<213> Neisseria meningitidis

<400> 30
Met Lys Ile Ser Phe His Leu Ala Leu Leu Pro Thr Leu Ile Ile Ala
1 5 10 15

Ser Phe Pro Val Ala Ala Ala Asp Thr Gln Asp Asn Gly Glu His Tyr
20 25 30

Thr Ala Thr Leu Pro Thr Val Ser Val Val Gly Gln Ser Asp Thr Ser
35 40 45

Val Leu Lys Gly Tyr Ile Asn Tyr Asp Glu Ala Ala Val Thr Arg Asn
50 55 60

Gly Gln Leu Ile Lys Glu Thr Pro Gln Thr Ile Asp Thr Leu Asn Ile
65 70 75 80

Gln Lys Asn Lys Asn Tyr Gly Thr Asn Asp Leu Ser Ser Ile Leu Glu

85 90 95

Gly Asn Ala Gly Ile Asp Ala Ala Tyr Asp Met Arg Gly Glu Ser Ile
100 105 110

Phe Leu Arg Gly Phe Gln Ala Asp Ala Ser Asp Ile Tyr Arg Asp Gly
115 120 125

Val Arg Glu Ser Gly Gln Val Arg Arg Ser Thr Ala Asn Ile Glu Arg
130 135 140

Val Glu Ile Leu Lys Gly Pro Ser Ser Val Leu Tyr Gly Arg Thr Asn
145 150 155 160

Gly Gly Gly Val Ile Asn Met Val Ser Lys Tyr Ala Asn Phe Lys Gln
165 170 175

Ser Arg Asn Ile Gly Thr Val Tyr Gly Ser Trp Ala Asn Arg Ser Leu
180 185 190

Asn Met Asp Ile Asn Glu Val Leu Asn Lys Asn Val Ala Ile Arg Leu
195 200 205

Thr Gly Glu Val Gly Arg Ala Asn Ser Phe Arg Ser Gly Ile Asp Ser
210 215 220

Lys Asn Val Met Val Ser Pro Ser Ile Thr Val Lys Leu Asp Asn Gly
225 230 235 240

Leu Lys Trp Thr Gly Gln Tyr Thr Tyr Asp Asn Val Glu Arg Thr Pro
245 250 255

Asp Arg Ser Pro Thr Lys Ser Val Tyr Asp Arg Phe Gly Leu Pro Tyr
260 265 270

Arg Met Gly Phe Ala His Arg Asn Asp Phe Val Lys Asp Lys Leu Gln
275 280 285

Val Trp Arg Ser Asp Leu Glu Tyr Ala Phe Asn Asp Lys Trp Arg Ala
290 295 300

Gln Trp Gln Leu Ala His Arg Thr Ala Ala Gln Asp Phe Asp His Phe
305 310 315 320

Tyr Ala Gly Ser Glu Asn Gly Asn Leu Ile Lys Arg Asn Tyr Ala Trp
325 330 335

Gln Gln Thr Asp Asn Lys Thr Leu Ser Ser Asn Leu Thr Leu Asn Gly

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            340                 345                 350

Asp Tyr Thr Ile Gly Arg Phe Glu Asn His Leu Thr Val Gly Met Asp
        355                 360                 365

Tyr Ser Arg Glu His Arg Asn Pro Thr Leu Gly Phe Ser Ser Ala Phe
    370                 375                 380

Ser Ala Ser Ile Asn Pro Tyr Asp Arg Ala Ser Trp Pro Ala Ser Gly
385                 390                 395                 400

Arg Leu Gln Pro Ile Leu Thr Gln Asn Arg His Lys Ala Asp Ser Tyr
                405                 410                 415

Gly Ile Phe Val Gln Asn Ile Phe Ser Ala Thr Pro Asp Leu Lys Phe
            420                 425                 430

Val Leu Gly Gly Arg Tyr Asp Lys Tyr Thr Phe Asn Ser Glu Asn Lys
        435                 440                 445

Leu Thr Gly Ser Ser Arg Gln Tyr Ser Gly His Ser Phe Ser Pro Asn
    450                 455                 460

Ile Gly Ala Val Trp Asn Ile Asn Pro Val His Thr Leu Tyr Ala Ser
465                 470                 475                 480

Tyr Asn Lys Gly Phe Ala Pro Tyr Gly Gly Arg Gly Gly Tyr Leu Ser
                485                 490                 495

Ile Asp Thr Leu Ser Ser Ala Val Phe Asn Ala Asp Pro Glu Tyr Thr
            500                 505                 510

Arg Gln Tyr Glu Thr Gly Val Lys Ser Ser Trp Leu Asp Asp Arg Leu
        515                 520                 525

Ser Thr Thr Leu Ser Ala Tyr Gln Ile Glu Arg Phe Asn Ile Arg Tyr
    530                 535                 540

Arg Pro Asp Pro Lys Asn Asn Pro Tyr Ile Tyr Ala Val Ser Gly Lys
545                 550                 555                 560

His Arg Ser Arg Gly Val Glu Leu Ser Ala Ile Gly Gln Ile Ile Pro
                565                 570                 575

Lys Lys Leu Tyr Leu Arg Gly Ser Leu Gly Val Met Gln Ala Lys Val
            580                 585                 590

Val Glu Asp Lys Glu Asn Pro Asp Arg Val Gly Ile His Leu Asn Asn
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595 600 605

Thr Ser Asn Val Thr Gly Asn Leu Phe Phe Arg Tyr Thr Pro Thr Glu
610 615 620

Asn Leu Tyr Gly Glu Ile Gly Val Thr Gly Thr Gly Lys Arg Tyr Gly
625 630 635 640

Tyr Asp Ser Arg Asn Lys Glu Val Thr Thr Leu Pro Gly Phe Ala Arg
645 650 655

Val Asp Ala Met Leu Gly Trp Asn His Lys Asn Val Asn Val Thr Phe
660 665 670

Ala Ala Ala Asn Leu Phe Asn Gln Lys Tyr Trp Arg Ser Asp Ser Met
675 680 685

Pro Gly Asn Pro Arg Gly Tyr Thr Ala Arg Val Asn Tyr Arg Phe
690 695 700

<210> 31
<211> 2113
<212> DNA
<213> Neisseria meningitidis

<400> 31
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gtggtcggac agtccgacac cagcgtactc aaaggctaca tcaactacga cgaagccgcc 180
gttacccgca acggacagct catcaaagaa acgccgcaaa ccatcgatac gctcaatatc 240
cagaaaaaca aaaattacgg cacgaacgat ttgagttcca tcctcgaagg caatgccggc 300
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gcatctgata tttaccgcga cggcgtacgc gaaagcgggc aggtgcgccg tagcaccgcc 420
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<210> 32
<211> 697
<212> PRT
<213> Neisseria meningitidis

<400> 32

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Ser	Phe	Pro	Val	Ala	Ala	Ala	Asp	Thr	Gln	Asp	Asn	Gly	Glu	His	Tyr
			20				25					30			
Thr	Ala	Thr	Leu	Pro	Thr	Val	Ser	Val	Val	Gly	Gln	Ser	Asp	Thr	Ser
		35					40					45			
Val	Leu	Lys	Gly	Tyr	Ile	Asn	Tyr	Asp	Glu	Ala	Ala	Val	Thr	Arg	Asn
	50					55					60				
Gly	Gln	Leu	Ile	Lys	Glu	Thr	Pro	Gln	Thr	Ile	Asp	Thr	Leu	Asn	Ile
65					70					75					80
Gln	Lys	Asn	Lys	Asn	Tyr	Gly	Thr	Asn	Asp	Leu	Ser	Ser	Ile	Leu	Glu
				85					90					95	
Gly	Asn	Ala	Gly	Ile	Asp	Ala	Ala	Tyr	Asp	Met	Arg	Gly	Glu	Ser	Ile
			100					105					110		
Phe	Leu	Arg	Gly	Phe	Gln	Ala	Asp	Ala	Ser	Asp	Ile	Tyr	Arg	Asp	Gly
		115					120					125			
Val	Arg	Glu	Ser	Gly	Gln	Val	Arg	Arg	Ser	Thr	Ala	Asn	Ile	Glu	Arg
	130					135					140				

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Val Glu Ile Leu Lys Gly Pro Ser Ser Val Leu Tyr Gly Arg Thr Asn
145                 150                 155                 160

Gly Gly Gly Val Ile Asn Met Val Ser Lys Tyr Ala Asn Phe Lys Gln
                165                 170                 175

Ser Arg Asn Ile Gly Thr Val Tyr Gly Ser Trp Ala Asn Arg Ser Leu
            180                 185                 190

Asn Met Asp Ile Asn Glu Val Leu Asn Lys Asn Val Ala Ile Arg Leu
        195                 200                 205

Thr Gly Glu Val Gly Arg Ala Asn Ser Phe Arg Ser Gly Ile Asp Ser
    210                 215                 220

Lys Asn Val Met Val Ser Pro Ser Ile Thr Val Lys Leu Asp Asn Gly
225                 230                 235                 240

Leu Lys Trp Thr Gly Gln Tyr Thr Tyr Asp Asn Val Glu Arg Thr Pro
                245                 250                 255

Asp Arg Ser Pro Thr Lys Ser Val Tyr Asp Arg Phe Gly Leu Pro Tyr
            260                 265                 270

Arg Met Gly Phe Ala His Arg Asn Asp Phe Val Lys Asp Lys Leu Gln
        275                 280                 285

Val Trp Arg Ser Asp Leu Glu Tyr Ala Phe Asn Asp Lys Trp Arg Ala
    290                 295                 300

Gln Trp Gln Leu Ala His Arg Thr Ala Ala Gln Asp Phe Asp His Phe
305                 310                 315                 320

Tyr Ala Gly Ser Glu Asn Gly Asn Leu Ile Lys Arg Asn Tyr Ala Trp
                325                 330                 335

Gln Gln Thr Asp Asn Lys Thr Leu Ser Ser Asn Leu Thr Leu Asn Gly
            340                 345                 350

Asp Tyr Thr Ile Gly Arg Phe Glu Asn His Leu Thr Val Gly Met Asp
        355                 360                 365

Tyr Ser Arg Glu His Arg Asn Pro Thr Leu Gly Phe Ser Ser Ala Phe
    370                 375                 380

Ser Ala Ser Ile Asn Pro Tyr Asp Arg Ala Ser Trp Pro Ala Ser Gly
385                 390                 395                 400
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Arg Leu Gln Pro Ile Leu Thr Gln Asn Arg His Lys Ala Asp Ser Tyr
                405                 410                 415

Gly Ile Phe Val Gln Asn Ile Phe Ser Ala Thr Pro Asp Leu Lys Phe
            420                 425                 430

Val Leu Gly Gly Arg Tyr Asp Lys Tyr Thr Phe Asn Ser Glu Asn Lys
        435                 440                 445

Leu Thr Gly Ser Ser Arg Gln Tyr Ser Gly His Ser Phe Ser Pro Asn
    450                 455                 460

Ile Gly Ala Val Trp Asn Ile Asn Pro Val His Thr Leu Tyr Ala Ser
465                 470                 475                 480

Tyr Asn Lys Gly Phe Ala Pro Tyr Gly Gly Arg Gly Gly Tyr Leu Ser
                485                 490                 495

Ile Asp Thr Leu Ser Ser Ala Val Phe Asn Ala Asp Pro Glu Tyr Thr
            500                 505                 510

Arg Gln Tyr Glu Thr Gly Val Lys Ser Ser Trp Leu Asp Asp Arg Leu
        515                 520                 525

Ser Thr Thr Leu Ser Ala Tyr Gln Ile Glu Arg Phe Asn Ile Arg Tyr
    530                 535                 540

Arg Pro Asp Pro Lys Asn Asn Pro Tyr Ile Tyr Ala Val Ser Gly Lys
545                 550                 555                 560

His Arg Ser Arg Gly Val Glu Leu Ser Ala Ile Gly Gln Ile Ile Pro
                565                 570                 575

Lys Lys Thr Leu Ser Ala Arg Phe Val Gly Arg Asp Ala Gly Glu Ser
            580                 585                 590

Arg Arg Gln Arg Lys Ser Arg Pro Ser Gly His Pro Phe Glu His Gln
        595                 600                 605

Gln Arg Tyr Arg Gln Pro Val Phe Pro Leu Tyr Pro Asp Arg Lys Pro
    610                 615                 620

Leu Arg Arg Asn Arg Arg Asn Arg Tyr Arg Gln Thr Leu Arg Leu Arg
625                 630                 635                 640

Leu Lys Lys Arg Ser Asp Tyr Ala Ser Arg Leu Cys Pro Ser Cys His
                645                 650                 655
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Ala Trp Leu Glu Pro Lys Cys Arg Tyr Leu Cys Arg Ser Gln Ser Val
660 665 670

Gln Ser Lys Ile Leu Ala Phe Gly Leu Tyr Ala Gly Ser Ala Arg Leu
675 680 685

Tyr Cys Pro Gly Lys Leu Pro Phe Leu
690 695

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<211> 2111
<212> DNA
<213> Neisseria meningitidis

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gtggtcggac agtccgacac cagcgtactc aaaggctaca tcaactacga cgaagccgcc 180
gttacccgca acggacagct catcaaagaa acgccgcaaa ccatcgatac gctcaatatc 240
cagaaaaaca aaaattacgg tacgaacgat ttgagttcca tcctcgaagg caatgccggc 300
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aacaaaaacg tcgccatccg tctcaccggc gaagtcgggc gcgccaattc gttccgcagc 660
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<210> 34
<211> 700
<212> PRT
<213> Neisseria meningitidis

<400> 34

Met	Lys	Ile	Ser	Phe	His	Leu	Ala	Leu	Leu	Pro	Thr	Leu	Ile	Ile	Ala
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Ser	Phe	Pro	Val	Ala	Ala	Ala	Asp	Thr	Gln	Asp	Asn	Gly	Glu	His	Tyr
			20					25					30		
Thr	Ala	Thr	Leu	Pro	Thr	Val	Ser	Val	Val	Gly	Gln	Ser	Asp	Thr	Ser
		35					40					45			
Val	Leu	Lys	Gly	Tyr	Ile	Asn	Tyr	Asp	Glu	Ala	Ala	Val	Thr	Arg	Asn
	50					55					60				
Gly	Gln	Leu	Ile	Lys	Glu	Thr	Pro	Gln	Thr	Ile	Asp	Thr	Leu	Asn	Ile
65					70					75					80
Gln	Lys	Asn	Lys	Asn	Tyr	Gly	Thr	Asn	Asp	Leu	Ser	Ser	Ile	Leu	Glu
				85					90					95	
Gly	Asn	Ala	Gly	Ile	Asp	Ala	Ala	Tyr	Asp	Met	Arg	Gly	Glu	Ser	Ile
			100					105					110		
Phe	Leu	Arg	Gly	Phe	Gln	Ala	Asp	Ala	Ser	Asp	Ile	Tyr	Arg	Asp	Gly
		115					120					125			
Val	Arg	Glu	Ser	Gly	Gln	Val	Arg	Arg	Ser	Thr	Ala	Asn	Ile	Glu	Arg
	130					135					140				
Val	Glu	Ile	Leu	Lys	Gly	Pro	Ser	Ser	Val	Leu	Tyr	Gly	Arg	Thr	Asn
145					150					155					160
Gly	Gly	Gly	Val	Ile	Asn	Met	Val	Ser	Lys	Tyr	Ala	Asn	Phe	Lys	Gln
				165					170					175	
Ser	Arg	Asn	Ile	Gly	Ala	Val	Tyr	Gly	Ser	Arg	Ala	Asn	Arg	Ser	Leu
			180					185					190		

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Asn Met Asp Ile Asn Glu Val Leu Asn Lys Asn Val Ala Ile Arg Leu
        195                 200                 205

Thr Gly Glu Val Gly Arg Ala Asn Ser Phe Arg Ser Gly Ile Asp Ser
    210                 215                 220

Lys Asn Val Met Val Ser Pro Ser Ile Thr Val Lys Leu Asp Asn Gly
225                 230                 235                 240

Leu Lys Trp Thr Gly Gln Tyr Thr Tyr Asp Asn Val Glu Arg Thr Pro
                245                 250                 255

Asp Arg Ser Pro Thr Lys Ser Val Tyr Asp Arg Phe Gly Leu Pro Tyr
            260                 265                 270

Arg Met Gly Phe Ala His Arg Asn Asp Phe Val Lys Asp Lys Leu Gln
        275                 280                 285

Val Trp Arg Ser Asp Leu Glu Tyr Ala Phe Asn Asp Lys Trp Arg Ala
    290                 295                 300

Gln Trp Gln Leu Ala His Arg Thr Ala Ala Gln Asp Phe Asp His Phe
305                 310                 315                 320

Tyr Ala Gly Ser Glu Asn Gly Asn Leu Ile Lys Arg Asn Tyr Ala Trp
                325                 330                 335

Gln Gln Thr Asp Asn Lys Thr Leu Ser Ser Asn Phe Thr Leu Asn Gly
            340                 345                 350

Asp Tyr Thr Ile Gly Arg Phe Glu Asn His Leu Thr Val Gly Met Asp
        355                 360                 365

Tyr Ser Arg Glu His Arg Asn Pro Thr Leu Gly Tyr Ser Arg Ala Phe
    370                 375                 380

Thr Ala Ser Ile Asp Pro Tyr Asp Arg Ala Ser Trp Pro Ala Ser Gly
385                 390                 395                 400

Arg Leu Gln Pro Ile Leu Thr Gln Asn Arg His Lys Ala Asp Ser Tyr
                405                 410                 415

Gly Ile Phe Val Gln Asn Ile Phe Ser Ala Thr Pro Asp Leu Lys Phe
            420                 425                 430

Val Leu Gly Gly Arg Tyr Asp Lys Tyr Thr Phe Asn Ser Glu Asn Lys
        435                 440                 445
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Leu Thr Gly Ser Ser Arg Gln Tyr Ser Gly His Ser Phe Ser Pro Asn
    450                 455                 460

Ile Gly Ala Val Trp Asn Ile Asn Pro Val His Thr Leu Tyr Ala Ser
465                 470                 475                 480

Tyr Asn Lys Gly Phe Ala Pro Tyr Gly Gly Arg Gly Gly Tyr Leu Ser
                485                 490                 495

Ile Asp Thr Ser Ser Ser Ala Val Phe Asn Ala Asp Pro Glu Tyr Thr
            500                 505                 510

Arg Gln Tyr Glu Thr Gly Val Lys Ser Ser Trp Leu Asp Asn Arg Leu
        515                 520                 525

Asp Thr Thr Leu Ser Ala Tyr Gln Ile Glu Arg Phe Asn Ile Arg Tyr
    530                 535                 540

Arg Pro Asp Ala Glu Asn Asn Pro Tyr Thr Trp Ala Val Gly Gly Lys
545                 550                 555                 560

His Arg Ser Arg Gly Val Glu Leu Ser Ala Ile Gly Gln Ile Ile Pro
                565                 570                 575

Lys Lys Leu Tyr Leu Arg Gly Ser Leu Gly Val Met Gln Ala Lys Val
            580                 585                 590

Val Glu Asp Lys Lys Asn Pro Asp Arg Val Gly Ile His Leu Asn Asn
        595                 600                 605

Thr Ser Asn Val Thr Gly Asn Leu Phe Phe Arg Tyr Thr Arg Pro Lys
    610                 615                 620

Thr Ser Thr Ala Lys Ser Ala Pro Val Gln Ala Asn Ala Thr Val Thr
625                 630                 635                 640

Thr Gln Glu Ile Lys Lys Leu Arg Phe Gln Ala Leu Pro Glu Leu Met
                645                 650                 655

Pro Cys Leu Ala Gly Thr Ile Lys Met Leu Thr Leu Pro Leu Pro Gln
            660                 665                 670

Pro Ile Cys Ser Ile Lys Asn Ile Gly Val Arg Thr Leu Cys Arg Val
        675                 680                 685

Ile Arg Ala Ala Ile Leu Pro Gly Ile Thr Val Ser
    690                 695                 700
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<210> 35
<211> 2112
<212> DNA
<213> Neisseria meningitidis

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gtggtcggac agtccgacac cagcgtactc aaaggctaca tcaactacga cgaagccgcc 180
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<210> 36
<211> 703
<212> PRT
<213> Neisseria meningitidis

<400> 36

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Met Lys Ile Ser Phe His Leu Ala Leu Leu Pro Thr Leu Ile Ile Ala
 1               5                  10                  15

Ser Phe Pro Val Ala Ala Ala Asp Thr Gln Asp Asn Gly Glu His Tyr
            20                  25                  30

Thr Ala Thr Leu Pro Thr Val Ser Val Val Gly Gln Ser Asp Thr Ser
        35                  40                  45

Val Leu Lys Gly Tyr Ile Asn Tyr Asp Glu Ala Ala Val Thr Arg Asn
    50                  55                  60

Gly Gln Leu Ile Lys Glu Thr Pro Gln Thr Ile Asp Thr Leu Asn Ile
65                  70                  75                  80

Gln Lys Asn Lys Asn Tyr Gly Thr Asn Asp Leu Ser Ser Ile Leu Glu
                85                  90                  95

Gly Asn Ala Gly Ile Asp Ala Ala Tyr Asp Met Arg Gly Glu Ser Ile
            100                 105                 110

Phe Leu Arg Gly Phe Gln Ala Asp Ala Ser Asp Ile Tyr Arg Asp Gly
        115                 120                 125

Val Arg Glu Ser Gly Gln Val Arg Arg Ser Thr Ala Asn Ile Glu Arg
    130                 135                 140

Val Glu Ile Leu Lys Gly Pro Ser Ser Val Leu Tyr Gly Arg Thr Asn
145                 150                 155                 160

Gly Gly Gly Val Ile Asn Met Val Ser Lys Tyr Ala Asn Phe Lys Gln
                165                 170                 175

Ser Arg Asn Ile Gly Ala Val Tyr Gly Ser Trp Ala Asn Arg Ser Leu
            180                 185                 190

Asn Met Asp Ile Asn Glu Val Leu Asn Lys Asn Val Ala Ile Arg Leu
        195                 200                 205

Thr Gly Glu Val Gly Arg Ala Asn Ser Phe Arg Ser Gly Ile Asp Ser
    210                 215                 220

Lys Asn Val Met Val Ser Pro Ser Ile Thr Val Lys Leu Asp Asn Gly
225                 230                 235                 240

Leu Lys Trp Thr Gly Gln Tyr Thr Tyr Asp Asn Val Glu Arg Thr Pro
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245 250 255

Asp Arg Ser Pro Thr Lys Ser Val Tyr Asp Arg Phe Gly Leu Pro Tyr
260 265 270

Arg Met Gly Phe Ala His Arg Asn Asp Phe Val Lys Asp Lys Leu Gln
275 280 285

Val Trp Arg Ser Asp Leu Glu Tyr Ala Phe Asn Asp Lys Trp Arg Ala
290 295 300

Gln Trp Gln Leu Ala His Arg Thr Ala Ala Gln Asp Phe Asp His Phe
305 310 315 320

Tyr Ala Gly Ser Glu Asn Gly Asn Leu Ile Lys Arg Asn Tyr Ala Trp
325 330 335

Gln Gln Thr Asp Asn Lys Thr Leu Ser Ser Asn Leu Thr Leu Asn Gly
340 345 350

Asp Tyr Thr Ile Gly Arg Phe Glu Asn His Leu Thr Val Gly Met Asp
355 360 365

Tyr Ser Arg Glu His Arg Asn Pro Thr Leu Gly Phe Ser Ser Ala Phe
370 375 380

Ser Ala Ser Ile Asn Pro Tyr Asp Arg Ala Ser Trp Pro Ala Ser Gly
385 390 395 400

Arg Leu Gln Pro Ile Leu Thr Gln Asn Arg His Lys Ala Asp Ala Tyr
405 410 415

Gly Ile Phe Val Gln Asn Ile Phe Ser Ala Thr Pro Asp Leu Lys Phe
420 425 430

Val Leu Gly Gly Arg Tyr Asp Lys Tyr Thr Phe Asn Ser Glu Asn Lys
435 440 445

Leu Thr Gly Ser Ser Arg Gln Tyr Ser Gly His Ser Phe Ser Pro Asn
450 455 460

Ile Gly Ala Val Trp Asn Ile Asn Pro Val His Thr Leu Tyr Ala Ser
465 470 475 480

Tyr Asn Lys Gly Phe Ala Pro Tyr Gly Gly Arg Gly Gly Tyr Leu Ser
485 490 495

Ile Asn Thr Ser Ser Ser Ala Val Phe Asn Ala Asp Pro Glu Tyr Thr

500 505 510

Arg Gln Tyr Glu Thr Gly Val Lys Ser Ser Trp Leu Asp Asp Arg Leu
515 520 525

Ser Thr Thr Leu Ser Ala Tyr Gln Ile Glu Arg Phe Asn Ile Arg Tyr
530 535 540

Arg Pro Asp Glu Gln Asn Asp Pro Tyr Thr Trp Ala Val Gly Gly Lys
545 550 555 560

His Arg Ser Arg Gly Val Glu Leu Ser Ala Ile Gly Gln Ile Ile Pro
565 570 575

Lys Lys Leu Tyr Leu Arg Gly Ser Leu Gly Val Met Gln Ala Lys Val
580 585 590

Val Glu Asp Lys Glu Asn Pro Asp Arg Val Gly Ile His Leu Asn Asn
595 600 605

Thr Ser Asn Val Thr Gly Asn Leu Phe Phe Arg Tyr Thr Pro Thr Glu
610 615 620

Asn Leu Tyr Gly Glu Ile Gly Val Thr Gly Thr Gly Lys Arg Tyr Gly
625 630 635 640

Tyr Asn Ser Arg Asn Lys Glu Val Thr Thr Leu Pro Gly Phe Ala Arg
645 650 655

Val Asp Ala Met Leu Gly Trp Asn His Lys Asn Val Asn Ile Thr Phe
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Ala Ala Ala Asn Leu Leu Asn Gln Lys Tyr Trp Arg Ser Asp Ala Met
675 680 685

Pro Gly Ala Pro Arg Thr Tyr Thr Ala Arg Val Asn Tyr Ser Phe
690 695 700

<210> 37
<211> 2112
<212> DNA
<213> Neisseria meningitidis

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<210> 38
<211> 702
<212> PRT
<213> Neisseria meningitidis

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Ser Phe Pro Val Ala Ala Ala Asp Thr Gln Asp Asn Gly Glu His Tyr
20 25 30

Thr Ala Thr Leu Pro Thr Val Ser Val Val Gly Gln Ser Asp Thr Ser
35 40 45

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Val Leu Lys Gly Tyr Ile Asn Tyr Asp Glu Ala Ala Val Thr Arg Asn
     50                  55                  60

Gly Gln Leu Ile Lys Glu Thr Pro Gln Thr Ile Asp Thr Leu Asn Ile
 65                  70                  75                  80

Lys Asn Lys Asn Tyr Gly Thr Asn Asp Leu Ser Ser Ile Leu Glu Gly
                 85                  90                  95

Asn Ala Gly Ile Asp Ala Ala Tyr Asp Met Arg Gly Glu Ser Ile Phe
            100                 105                 110

Leu Arg Gly Phe Gln Ala Asp Ala Ser Asp Ile Tyr Arg Asp Gly Val
        115                 120                 125

Arg Glu Ser Gly Gln Val Arg Arg Ser Thr Ala Asn Ile Glu Arg Val
    130                 135                 140

Glu Ile Leu Lys Gly Pro Ser Ser Val Leu Tyr Gly Arg Thr Asn Gly
145                 150                 155                 160

Gly Gly Val Ile Asn Met Val Ser Lys Tyr Ala Asn Phe Lys Gln Ser
                165                 170                 175

Arg Asn Ile Gly Ala Val Tyr Gly Ser Trp Ala Asn Arg Ser Leu Asn
            180                 185                 190

Met Asp Ile Asn Glu Val Leu Asn Lys Asn Val Ala Ile Arg Leu Thr
        195                 200                 205

Gly Glu Val Gly Arg Ala Asn Ser Phe Arg Ser Gly Ile Asp Ser Lys
    210                 215                 220

Asn Val Met Val Ser Pro Ser Ile Thr Val Lys Leu Asp Asn Gly Leu
225                 230                 235                 240

Lys Trp Thr Gly Gln Tyr Thr Tyr Asp Asn Val Glu Arg Thr Pro Asp
                245                 250                 255

Arg Ser Pro Thr Lys Ser Val Tyr Asp Arg Phe Gly Leu Pro Tyr Arg
            260                 265                 270

Met Gly Phe Ala His Arg Asn Asp Phe Val Lys Asp Lys Leu Gln Val
        275                 280                 285

Trp Arg Ser Asp Leu Glu Tyr Ala Phe Asn Asp Lys Trp Arg Ala Gln
    290                 295                 300
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Trp Gln Leu Ala His Arg Thr Ala Ala Gln Asp Phe Asp His Phe Tyr
305                 310                 315                 320

Ala Gly Ser Glu Asn Gly Asn Leu Ile Lys Arg Asn Tyr Ala Trp Gln
                325                 330                 335

Gln Thr Asp Asn Lys Thr Leu Ser Ser Asn Phe Thr Leu Asn Gly Asp
            340                 345                 350

Tyr Thr Ile Gly Arg Phe Glu Asn His Leu Thr Val Gly Met Asp Tyr
        355                 360                 365

Ser Arg Glu His Arg Asn Pro Thr Leu Gly Tyr Ser Arg Ala Phe Thr
    370                 375                 380

Ala Ser Ile Asp Pro Tyr Asp Arg Ala Ser Trp Pro Ala Ser Gly Arg
385                 390                 395                 400

Leu Gln Pro Ile Leu Thr Gln Asn Arg His Lys Ala Asp Ser Tyr Gly
                405                 410                 415

Ile Phe Val Gln Asn Ile Phe Ser Ala Thr Pro Asp Leu Lys Phe Val
            420                 425                 430

Leu Gly Gly Arg Tyr Asp Lys Tyr Thr Phe Asn Ser Glu Asn Lys Leu
        435                 440                 445

Thr Gly Ser Ser Arg Gln Tyr Ser Gly His Ser Phe Ser Pro Asn Ile
    450                 455                 460

Gly Ala Val Trp Asn Ile Asn Pro Val His Thr Leu Tyr Ala Ser Tyr
465                 470                 475                 480

Asn Lys Gly Phe Ala Pro Tyr Gly Gly Arg Gly Gly Tyr Leu Ser Ile
                485                 490                 495

Asn Thr Ser Ser Ser Ala Val Phe Asn Ala Asp Pro Glu Tyr Thr Arg
            500                 505                 510

Gln Tyr Glu Thr Gly Val Lys Ser Ser Trp Leu Asp Asp Arg Leu Ser
        515                 520                 525

Thr Thr Leu Ser Ala Tyr Gln Ile Glu Arg Phe Asn Ile Arg Tyr Arg
    530                 535                 540

Pro Asp Glu Gln Asn Asp Pro Tyr Thr Trp Ala Val Gly Gly Lys His
545                 550                 555                 560
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Arg Ser Arg Gly Val Glu Leu Ser Ala Ile Gly Gln Ile Ile Pro Lys
                565                 570                 575

Lys Leu Tyr Leu Arg Gly Ser Leu Gly Val Met Gln Ala Lys Val Val
            580                 585                 590

Glu Asp Lys Glu Asn Pro Asp Arg Val Gly Ile His Leu Asn Asn Thr
        595                 600                 605

Ser Asn Val Thr Gly Asn Leu Phe Phe Arg Tyr Thr Pro Thr Glu Asn
    610                 615                 620

Leu Tyr Gly Glu Ile Gly Val Thr Gly Thr Gly Lys Arg Tyr Gly Tyr
625                 630                 635                 640

Asn Ser Arg Asn Lys Glu Val Thr Thr Leu Pro Gly Phe Ala Arg Val
                645                 650                 655

Asp Ala Met Leu Gly Trp Asn His Lys Asn Val Asn Ile Thr Phe Ala
            660                 665                 670

Ala Ala Asn Leu Leu Asn Gln Lys Tyr Trp Arg Ser Asp Ala Met Pro
        675                 680                 685

Gly Ala Pro Arg Thr Tyr Thr Ala Arg Val Asn Tyr Ser Phe
    690                 695                 700
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<210> 39
<211> 2112
<212> DNA
<213> Neisseria meningitidis

<400> 39

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<211> 702
<212> PRT
<213> Neisseria meningitidis

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Ser Phe Pro Val Ala Ala Ala Asp Thr Gln Asp Asn Gly Glu His Tyr
20 25 30

Thr Ala Thr Leu Pro Thr Val Ser Val Val Gly Gln Ser Asp Thr Ser
35 40 45

Val Leu Lys Gly Tyr Ile Asn Tyr Asp Glu Ala Ala Val Thr Arg Asn
50 55 60

Gly Gln Leu Ile Lys Glu Thr Pro Gln Thr Ile Asp Thr Leu Asn Ile
65 70 75 80

Lys Asn Lys Asn Tyr Gly Thr Asn Asp Leu Ser Ser Ile Leu Glu Gly
85 90 95

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Asn Ala Gly Ile Asp Ala Ala Tyr Asp Met Arg Gly Glu Ser Ile Phe
            100                 105                 110

Leu Arg Gly Phe Gln Ala Asp Ala Ser Asp Ile Tyr Arg Asp Gly Val
        115                 120                 125

Arg Glu Ser Gly Gln Val Arg Arg Ser Thr Ala Asn Ile Glu Arg Val
    130                 135                 140

Glu Ile Leu Lys Gly Pro Ser Ser Val Leu Tyr Gly Arg Thr Asn Gly
145                 150                 155                 160

Gly Gly Val Ile Asn Met Val Ser Lys Tyr Ala Asn Phe Lys Gln Ser
                165                 170                 175

Arg Asn Ile Gly Ala Val Tyr Gly Ser Trp Ala Asn Arg Ser Leu Asn
            180                 185                 190

Met Asp Ile Asn Glu Val Leu Asn Lys Asn Val Ala Ile Arg Leu Thr
        195                 200                 205

Gly Glu Val Gly Arg Ala Asn Ser Phe Arg Ser Gly Ile Asp Ser Lys
    210                 215                 220

Asn Val Met Val Ser Pro Ser Ile Thr Val Lys Leu Asp Asn Gly Leu
225                 230                 235                 240

Lys Trp Thr Gly Gln Tyr Thr Tyr Asp Asn Val Glu Arg Thr Pro Asp
                245                 250                 255

Arg Ser Pro Thr Lys Ser Val Tyr Asp Arg Phe Gly Leu Pro Tyr Arg
            260                 265                 270

Met Gly Phe Ala His Arg Asn Asp Phe Val Lys Asp Lys Leu Gln Val
        275                 280                 285

Trp Arg Ser Asp Leu Glu Tyr Ala Phe Asn Asp Lys Trp Arg Ala Gln
    290                 295                 300

Trp Gln Leu Ala His Arg Thr Ala Ala Gln Asp Phe Asp His Phe Tyr
305                 310                 315                 320

Ala Gly Ser Glu Asn Gly Asn Leu Ile Lys Arg Asn Tyr Ala Trp Gln
                325                 330                 335

Gln Thr Asp Asn Lys Thr Leu Ser Ser Asn Phe Thr Leu Asn Gly Asp
            340                 345                 350
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Tyr Thr Ile Gly Arg Phe Glu Asn His Leu Thr Val Gly Met Asp Tyr
355 360 365

Ser Arg Glu His Arg Asn Pro Thr Leu Gly Tyr Arg Gly Ser Phe Thr
370 375 380

Val Pro Ile Asn Pro Tyr Asp Arg Ala Ser Trp Pro Ala Ser Gly Arg
385 390 395 400

Leu Gln Pro Ile Leu Thr Gln Asn Arg His Lys Ala Asp Ser Tyr Gly
405 410 415

Ile Phe Val Gln Asn Ile Phe Ser Ala Thr Pro Asp Leu Lys Phe Val
420 425 430

Leu Gly Gly Arg Tyr Asp Lys Tyr Thr Phe Asn Ser Glu Asn Lys Leu
435 440 445

Thr Gly Asn Ser Arg Gln Tyr Ser Gly His Ser Phe Ser Pro Asn Ile
450 455 460

Gly Ala Val Trp Asn Ile Asn Pro Val His Thr Leu Tyr Ala Ser Tyr
465 470 475 480

Asn Lys Gly Phe Ala Pro Tyr Gly Gly Arg Gly Gly Tyr Leu Ser Ile
485 490 495

Asp Thr Leu Ser Ser Ala Val Phe Asn Ala Asp Pro Glu Tyr Thr Arg
500 505 510

Gln Tyr Glu Thr Gly Val Lys Ser Ser Trp Leu Asp Asp Arg Leu Ser
515 520 525

Thr Thr Leu Ser Ala Tyr Gln Ile Glu Arg Phe Asn Ile Arg Tyr Arg
530 535 540

Pro Asp Pro Lys Asn Asn Pro Tyr Ile Tyr Ala Val Ser Gly Lys His
545 550 555 560

Arg Ser Arg Gly Val Glu Leu Ser Ala Ile Gly Gln Ile Ile Pro Lys
565 570 575

Lys Leu Tyr Leu Arg Gly Ser Leu Gly Val Met Gln Ala Lys Val Val
580 585 590

Glu Asp Lys Glu Asn Pro Asp Arg Val Gly Ile His Leu Asn Asn Thr
595 600 605

Ser Asn Val Thr Gly Asn Leu Phe Phe Arg Tyr Thr Pro Thr Glu Asn
610 615 620

Leu Tyr Gly Glu Ile Gly Val Thr Gly Thr Gly Lys Arg Tyr Gly Tyr
625 630 635 640

Asn Ser Arg Asn Lys Glu Val Thr Thr Leu Pro Gly Phe Ala Arg Val
645 650 655

Asp Ala Met Leu Gly Trp Asn His Lys Asn Val Asn Val Thr Phe Ala
660 665 670

Ala Ala Asn Leu Phe Asn Gln Lys Tyr Trp Arg Ser Asp Ser Met Pro
675 680 685

Gly Asn Pro Arg Gly Tyr Thr Ala Arg Val Asn Tyr Arg Phe
690 695 700

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<212> DNA
<213> Neisseria meningitidis

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taccgtttct ga 2112

<210> 42
<211> 702
<212> PRT
<213> Neisseria meningitidis

<400> 42

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Ser Phe Pro Val Ala Ala Ala Asp Thr Gln Asp Asn Gly Glu His Tyr
             20                  25                  30

Thr Ala Thr Leu Pro Thr Val Ser Val Val Gly Gln Ser Asp Thr Ser
         35                  40                  45

Val Leu Lys Gly Tyr Ile Asn Tyr Asp Glu Ala Ala Val Thr Arg Asn
     50                  55                  60

Gly Gln Leu Ile Lys Glu Thr Pro Gln Thr Ile Asp Thr Leu Asn Ile
 65                  70                  75                  80

Gln Lys Asn Lys Asn Tyr Gly Thr Asn Asp Leu Ser Ser Ile Leu Glu
                 85                  90                  95

Gly Asn Ala Gly Ile Asp Ala Ala Tyr Asp Met Arg Gly Glu Ser Ile
            100                 105                 110

Phe Leu Arg Gly Phe Gln Ala Asp Ala Ser Asp Ile Tyr Arg Asp Gly
        115                 120                 125

Val Arg Glu Ser Gly Gln Val Arg Arg Ser Thr Ala Asn Ile Glu Arg
    130                 135                 140
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Val Glu Ile Leu Lys Gly Pro Ser Ser Val Leu Tyr Gly Arg Thr Asn
145                 150                 155                 160

Gly Gly Gly Val Ile Asn Met Val Ser Lys Tyr Ala Asn Phe Lys Gln
                165                 170                 175

Ser Arg Asn Ile Gly Ala Val Tyr Gly Trp Ala Asn Arg Ser Leu Asn
            180                 185                 190

Met Asp Ile Asn Glu Val Leu Asn Lys Asn Val Ala Ile Arg Leu Thr
        195                 200                 205

Gly Glu Val Gly Arg Ala Asn Ser Phe Arg Ser Gly Ile Asp Ser Lys
    210                 215                 220

Asn Val Met Val Ser Pro Ser Ile Thr Val Lys Leu Asp Asn Gly Leu
225                 230                 235                 240

Lys Trp Thr Gly Gln Tyr Thr Tyr Asp Asn Val Glu Arg Thr Pro Asp
                245                 250                 255

Arg Ser Pro Thr Lys Ser Val Tyr Asp Arg Phe Gly Leu Pro Tyr Arg
            260                 265                 270

Met Gly Phe Ala His Arg Asn Asp Phe Val Lys Asp Lys Leu Gln Val
        275                 280                 285

Trp Arg Ser Asp Leu Glu Tyr Ala Phe Asn Asp Lys Trp Arg Ala Gln
    290                 295                 300

Trp Gln Leu Ala His Arg Thr Ala Ala Gln Asp Phe Asp His Phe Tyr
305                 310                 315                 320

Ala Gly Ser Glu Asn Gly Asn Leu Ile Lys Arg Asn Tyr Ala Trp Gln
                325                 330                 335

Gln Thr Asp Asn Lys Thr Leu Ser Ser Asn Phe Thr Leu Asn Gly Asp
            340                 345                 350

Tyr Thr Ile Gly Arg Phe Glu Asn His Leu Thr Val Gly Met Asp Tyr
        355                 360                 365

Ser Arg Glu His Arg Asn Pro Thr Leu Gly Tyr Asn Arg Ala Phe Ser
    370                 375                 380

Ala Ser Ile Asn Pro Tyr Asp Arg Ala Ser Trp Pro Ala Ser Gly Arg
385                 390                 395                 400
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Leu Gln Pro Ile Leu Thr Gln Asn Arg His Lys Ala Asp Ser Tyr Gly
405 410 415

Ile Phe Val Gln Asn Ile Phe Ser Ala Thr Pro Asp Leu Lys Phe Val
420 425 430

Leu Gly Gly Arg Tyr Asp Lys Tyr Thr Phe Asn Ser Glu Asn Lys Leu
435 440 445

Thr Gly Ser Ser Arg Gln Tyr Ser Gly His Ser Phe Ser Pro Asn Ile
450 455 460

Gly Ala Val Trp Asn Ile Asn Pro Val His Thr Leu Tyr Ala Ser Tyr
465 470 475 480

Asn Lys Gly Phe Ala Pro Tyr Gly Gly Arg Gly Gly Tyr Leu Ser Ile
485 490 495

Asp Thr Leu Ser Ser Ala Val Phe Asn Ala Asp Pro Glu Tyr Thr Arg
500 505 510

Gln Tyr Glu Thr Gly Val Lys Ser Ser Trp Leu Asp Asp Arg Leu Ser
515 520 525

Thr Thr Leu Ser Ala Tyr Gln Ile Glu Arg Phe Asn Ile Arg Tyr Arg
530 535 540

Pro Asp Pro Lys Asn Asn Pro Tyr Ile Tyr Ala Val Ser Gly Lys His
545 550 555 560

Arg Ser Arg Gly Val Glu Leu Ser Ala Ile Gly Gln Ile Ile Pro Lys
565 570 575

Lys Leu Tyr Leu Arg Gly Ser Leu Gly Val Met Gln Ala Lys Val Val
580 585 590

Glu Asp Lys Glu Asn Pro Asp Arg Val Gly Ile His Leu Asn Asn Thr
595 600 605

Ser Asn Val Thr Gly Asn Leu Phe Phe Arg Tyr Thr Pro Thr Glu Asn
610 615 620

Leu Tyr Gly Glu Ile Gly Val Thr Gly Thr Gly Lys Arg Tyr Gly Tyr
625 630 635 640

Asp Ser Arg Asn Lys Glu Val Thr Thr Leu Pro Gly Phe Ala Arg Val
645 650 655

Asp Ala Met Leu Gly Trp Asn His Lys Asn Val Asn Val Thr Phe Ala
660 665 670

Ala Ala Asn Leu Phe Asn Gln Lys Tyr Trp Arg Ser Asp Ser Met Pro
675 680 685

Gly Asn Pro Arg Gly Tyr Thr Ala Arg Val Asn Tyr Arg Phe
690 695 700

<210> 43
<211> 2109
<212> DNA
<213> Neisseria meningitidis

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ggcggcggcg tcatcaacat ggtcagcaaa tacgccaact tcaaacaaag ccgcaacatc 540
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aacaaaaacg tcgccatccg tctcaccggc gaagtcgggc gcgccaattc gttccgcagc 660
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ccgactgaaa acctctacgg cgaaatcggc gtaaccggta caggcaaacg ctacggctac 1920

aactcaagaa ataaagaagt gaccacgctt ccaggctttg cccgagttga tgccatgctc 1980
ggctggaacc ataaaaatgt taacgttacc tttgccgctg ccaatctgct caatcaaaaa 2040
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cgtttctga 2109

<210> 44
<211> 702
<212> PRT
<213> Neisseria meningitidis

<400> 44
Met Lys Ile Ser Phe His Leu Ala Leu Leu Pro Thr Leu Ile Ile Ala
1 5 10 15

Ser Phe Pro Val Ala Ala Ala Asp Thr Gln Asp Asn Gly Glu His Tyr
20 25 30

Thr Ala Thr Leu Pro Thr Val Ser Val Val Gly Gln Ser Asp Thr Ser
35 40 45

Val Leu Lys Gly Tyr Ile Asn Tyr Asp Glu Ala Ala Val Thr Arg Asn
50 55 60

Gly Gln Leu Ile Lys Glu Thr Pro Gln Thr Ile Asp Thr Leu Asn Ile
65 70 75 80

Gln Lys Asn Lys Asn Tyr Gly Thr Asn Asp Leu Ser Ser Ile Leu Glu
85 90 95

Gly Asn Ala Gly Ile Asp Ala Ala Tyr Asp Met Arg Gly Glu Ser Ile
100 105 110

Phe Leu Arg Gly Phe Gln Ala Asp Ala Ser Asp Ile Tyr Arg Asp Gly
115 120 125

Val Arg Glu Ser Gly Gln Val Arg Arg Ser Thr Ala Asn Ile Glu Arg
130 135 140

Val Glu Ile Leu Lys Gly Pro Ser Ser Val Leu Tyr Gly Arg Thr Asn
145 150 155 160

Gly Gly Gly Val Ile Asn Met Val Ser Lys Tyr Ala Asn Phe Lys Gln
165 170 175

Ser Arg Asn Ile Gly Ala Val Tyr Gly Ser Trp Ala Asn Arg Ser Leu
180 185 190

Asn Met Asp Ile Asn Glu Val Leu Asn Lys Asn Val Ala Ile Arg Leu

195 200 205

Thr Gly Glu Val Gly Arg Ala Asn Ser Phe Arg Ser Gly Ile Asp Ser
210 215 220

Lys Asn Val Met Val Ser Pro Ser Ile Thr Val Lys Leu Asp Asn Gly
225 230 235 240

Leu Lys Trp Thr Gly Gln Tyr Thr Tyr Asp Asn Val Glu Arg Thr Pro
245 250 255

Asp Arg Ser Pro Thr Lys Ser Val Tyr Asp Arg Phe Gly Leu Pro Tyr
260 265 270

Arg Met Gly Phe Ala His Arg Asn Asp Phe Val Lys Asp Lys Leu Gln
275 280 285

Val Trp Arg Ser Asp Leu Glu Tyr Ala Phe Asn Asp Lys Trp Arg Ala
290 295 300

Gln Trp Gln Leu Ala His Arg Thr Ala Ala Gln Asp Phe Asp His Phe
305 310 315 320

Tyr Ala Gly Ser Glu Asn Gly Asn Leu Ile Lys Arg Asn Tyr Ala Trp
325 330 335

Gln Gln Thr Asp Asn Lys Thr Leu Ser Ser Asn Leu Thr Leu Asn Gly
340 345 350

Asp Tyr Thr Ile Gly Arg Phe Glu Asn His Leu Thr Val Gly Met Asp
355 360 365

Tyr Ser Arg Glu His Arg Asn Pro Thr Leu Gly Tyr Arg Gly Ser Phe
370 375 380

Thr Val Pro Ile Asn Pro Tyr Asp Arg Ala Ser Trp Pro Ala Ser Gly
385 390 395 400

Arg Leu Gln Pro Ile Leu Thr Gln Asn Arg His Lys Ala Asp Ser Tyr
405 410 415

Gly Ile Phe Val Gln Asn Ile Phe Ser Ala Thr Pro Asp Leu Lys Phe
420 425 430

Val Leu Gly Gly Arg Tyr Asp Lys Tyr Thr Phe Asn Ser Glu Asn Lys
435 440 445

Leu Thr Gly Asn Ser Arg Gln Tyr Ser Gly His Ser Phe Ser Pro Asn

```
    450                 455                 460

Ile Gly Ala Val Trp Asn Ile Asn Pro Val His Thr Leu Tyr Ala Ser
465                 470                 475                 480

Tyr Asn Lys Gly Phe Ala Pro Tyr Gly Gly Arg Gly Tyr Leu Ser Ile
                485                 490                 495

Asp Thr Ser Ser Ala Ala Val Phe Asn Ala Ala Pro Glu Tyr Thr Arg
            500                 505                 510

Gln Tyr Glu Thr Gly Val Lys Ser Ser Trp Leu Asp Asp Arg Leu Ser
        515                 520                 525

Thr Thr Leu Ser Ala Tyr Gln Ile Glu Arg Phe Asn Ile Arg Tyr Arg
    530                 535                 540

Pro Asp Pro Lys Asn Asn Pro Tyr Ile Tyr Ala Val Ser Gly Lys His
545                 550                 555                 560

Arg Ser Arg Gly Val Glu Leu Ser Ala Ile Gly Gln Ile Ile Pro Lys
                565                 570                 575

Lys Leu Tyr Leu Arg Gly Ser Leu Gly Val Met Gln Ala Lys Val Val
            580                 585                 590

Glu Asp Lys Glu Asn Pro Asp Arg Val Gly Ile His Leu Asn Asn Thr
        595                 600                 605

Ser Asn Val Thr Gly Asn Leu Phe Phe Arg Tyr Thr Pro Thr Glu Asn
    610                 615                 620

Leu Tyr Gly Glu Ile Gly Val Thr Gly Thr Gly Lys Arg Tyr Gly Tyr
625                 630                 635                 640

Asn Ser Arg Asn Lys Glu Val Thr Thr Leu Pro Gly Phe Ala Arg Val
                645                 650                 655

Asp Ala Met Leu Gly Trp Asn His Lys Asn Val Asn Val Thr Phe Ala
            660                 665                 670

Ala Ala Asn Leu Leu Asn Gln Lys Tyr Trp Arg Ser Asp Ser Met Pro
        675                 680                 685

Gly Asn Pro Arg Gly Tyr Thr Ala Arg Val Asn Tyr Arg Phe
    690                 695                 700
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<210> 45
<211> 2108
<212> DNA
<213> Neisseria meningitidis

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gtggtcggac agtccgacac cagcgtactc aaaggctaca tcaactacga cgaagccgcc 180
gttacccgca acggacagct catcaaagaa acgccgcaaa ccatcgatac gctcaatatc 240
cagaaaaaca aaaattacgg cacgaacgat ttgagttcca tcctcgaagg caatgccggc 300
atcgacgctg cctacgatat gcgcggtgaa agcattttcc tgcgcggttt tcaagccgac 360
gcatccgata tttaccgcga cggcgtgcgc gaaagcggac aagtgcgccg cagtactgcc 420
aacatcgagc gcgtggaaat cctgaaaggc ccgtcttccg tgctttacgg ccgtaccaac 480
ggcggcggcg tcatcaacat ggtcagcaaa tacgccaact tcaaacaaag ccgcaacatc 540
ggtgcggttt acggttcgtg ggcaaaccgc agcctgaata tggacattaa cgaagtgctg 600
aacaaaaacg tcgccatccg tctcaccggc gaagtcgggc gcgccaattc gttccgcagc 660
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ttgaagtgga cggggcaata cacctacgac aatgtggagc gcacgcccga ccgcagtccg 780
accaagtccg tgtacgaccg cttcggactg ccttaccgca tggggttcgc ccacccgaac 840
gattttgtca aagacaagct gcaagtttgg cgttccgacc tcgaatacgc cttcaacgac 900
aaatggcgcg cccaatggca gctcgcccac cgcacggcag cgcaggattt cgaccatttt 960
tatgcaggca gcgaaaacgg cagccgaatc aaacgcaact acgcctggca gcagaccgac 1020
aacaaaactc tgtcgtccaa cttcacgctc aacggcgact acaccatcgg tcgttttgaa 1080
aaccacctga ccgtaggcat ggattacagc cgcgaacacc gcaacccgac attgggctac 1140
cgcggcagtt tcaccgtgcc catcaacccc tacgaccgcg caagctggcc ggcttcgggc 1200
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ttcagcccca acatcggcgc agtgtggaac atcaacccag tccacacact ttacgcctcg 1440
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gccgccgtgt tcaacgccgc ccccgagtac acccccaata cgaaaccggc gtcaaaagca 1560
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gctggaacca taaaaatgtt aacgttacct ttgccgcagc caatctgttc aatcaaaaat 2040
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gtttctga 2108

<210> 46
<211> 697
<212> PRT
<213> Neisseria meningitidis

<400> 46

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Met Lys Ile Ser Phe His Leu Ala Leu Leu Pro Thr Leu Ile Ile Ala
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Ser Phe Pro Val Ala Ala Ala Asp Thr Gln Asp Asn Gly Glu His Tyr
            20                  25                  30

Thr Ala Thr Leu Pro Thr Val Ser Val Val Gly Gln Ser Asp Thr Ser
        35                  40                  45

Val Leu Lys Gly Tyr Ile Asn Tyr Asp Glu Ala Ala Val Thr Arg Asn
    50                  55                  60

Gly Gln Leu Ile Lys Glu Thr Pro Gln Thr Ile Asp Thr Leu Asn Ile
65                  70                  75                  80

Gln Lys Asn Lys Asn Tyr Gly Thr Asn Asp Leu Ser Ser Ile Leu Glu
                85                  90                  95

Gly Asn Ala Gly Ile Asp Ala Ala Tyr Asp Met Arg Gly Glu Ser Ile
            100                 105                 110

Phe Leu Arg Gly Phe Gln Ala Asp Ala Ser Asp Ile Tyr Arg Asp Gly
        115                 120                 125

Val Arg Glu Ser Gly Gln Val Arg Arg Ser Thr Ala Asn Ile Glu Arg
    130                 135                 140

Val Glu Ile Leu Lys Gly Pro Ser Ser Val Leu Tyr Gly Arg Thr Asn
145                 150                 155                 160

Gly Gly Gly Val Ile Asn Met Val Ser Lys Tyr Ala Asn Phe Lys Gln
                165                 170                 175

Ser Arg Asn Ile Gly Ala Val Tyr Gly Ser Trp Ala Asn Arg Ser Leu
            180                 185                 190

Asn Met Asp Ile Asn Glu Val Leu Asn Lys Asn Val Ala Ile Arg Leu
        195                 200                 205

Thr Gly Glu Val Gly Arg Ala Asn Ser Phe Arg Ser Gly Ile Asp Ser
    210                 215                 220

Lys Asn Val Met Val Ser Pro Ser Ile Thr Val Lys Leu Asp Asn Gly
225                 230                 235                 240

Leu Lys Trp Thr Gly Gln Tyr Thr Tyr Asp Asn Val Glu Arg Thr Pro
                245                 250                 255
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Asp Arg Ser Pro Thr Lys Ser Val Tyr Asp Arg Phe Gly Leu Pro Tyr
            260                 265                 270

Arg Met Gly Phe Ala His Pro Asn Asp Phe Val Lys Asp Lys Leu Gln
        275                 280                 285

Val Trp Arg Ser Asp Leu Glu Tyr Ala Phe Asn Asp Lys Trp Arg Ala
    290                 295                 300

Gln Trp Gln Leu Ala His Arg Thr Ala Ala Gln Asp Phe Asp His Phe
305                 310                 315                 320

Tyr Ala Gly Ser Glu Asn Gly Ser Arg Ile Lys Arg Asn Tyr Ala Trp
                325                 330                 335

Gln Gln Thr Asp Asn Lys Thr Leu Ser Ser Asn Phe Thr Leu Asn Gly
            340                 345                 350

Asp Tyr Thr Ile Gly Arg Phe Glu Asn His Leu Thr Val Gly Met Asp
        355                 360                 365

Tyr Ser Arg Glu His Arg Asn Pro Thr Leu Gly Tyr Arg Gly Ser Phe
    370                 375                 380

Thr Val Pro Ile Asn Pro Tyr Asp Arg Ala Ser Trp Pro Ala Ser Gly
385                 390                 395                 400

Arg Leu Gln Pro Ile Leu Thr Gln Asn Arg His Lys Ala Asp Ser Tyr
                405                 410                 415

Gly Ile Phe Val Gln Asn Ile Phe Ser Ala Thr Pro Asp Leu Lys Phe
            420                 425                 430

Val Leu Gly Gly Arg Tyr Asp Lys Tyr Thr Phe Asn Ser Glu Asn Lys
        435                 440                 445

Leu Thr Gly Asn Ser Arg Gln Tyr Ser Gly His Ser Phe Ser Pro Asn
    450                 455                 460

Ile Gly Ala Val Trp Asn Ile Asn Pro Val His Thr Leu Tyr Ala Ser
465                 470                 475                 480

Tyr Asn Lys Gly Phe Ala Pro Tyr Gly Gly Arg Gly Tyr Leu Ser Ile
                485                 490                 495

Asp Thr Ser Ser Ala Ala Val Phe Asn Ala Ala Pro Glu Tyr Thr Pro
            500                 505                 510
```

Asn Thr Lys Pro Ala Ser Lys Ala Val Gly Trp Thr Ile Val Trp Thr
515 520 525

Pro Pro Cys Arg Phe Thr Lys Ser Asn Ala Ser Ile Ser Ala Thr Ala
530 535 540

Pro Ile Gln Lys Thr Thr Leu Ile Phe Met Arg Leu Ala Ala Asn Thr
545 550 555 560

Val Arg Ala Ala Trp Asn Cys Pro Pro Ser Gly Lys Ser Ser Pro Lys
565 570 575

Asn Ser Ile Cys Ala Val Arg Trp Ala Cys Arg Arg Lys Ser Leu Lys
580 585 590

Thr Lys Lys Ile Pro Thr Glu Trp Ala Ser Ile Ile Thr Pro Ala Thr
595 600 605

Leu Pro Ala Thr Cys Phe Ser Val Ile Pro Arg Pro Lys Thr Ser Thr
610 615 620

Ala Lys Ser Ala Pro Val Arg Ala Asn Ala Thr Val Thr Thr Gln Glu
625 630 635 640

Ile Lys Lys Leu Arg Phe Gln Ala Leu Pro Glu Leu Met Pro Cys Leu
645 650 655

Ala Gly Thr Ile Lys Met Leu Thr Leu Pro Leu Pro Gln Pro Ile Cys
660 665 670

Ser Ile Lys Asn Ile Gly Val Arg Thr Leu Cys Arg Val Ile Arg Ala
675 680 685

Ala Ile Leu Pro Gly Ile Thr Val Ser
690 695

<210> 47
<211> 2113
<212> DNA
<213> Neisseria meningitidis

<400> 47
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gtggtcggac agtccgacac cagcgtactc aaaggctaca tcaactacga cgaagccgcc 180
gttacccgca acggacagct catcaaagaa acgccgcaaa ccatcgatac gctcaatatc 240

cagaaaaaca aaaattacgg cacgaacgat ttgagttcca tcctcgaagg caatgccggc 300
atcgacgccg cctacgatat gcgcggcgaa agcattttcc tgcgcggctt tcaagccgac 360
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aacatcgagc gcgtggaaat cctgaaaggt ccgtcctccg tgctttatgg gcgtaccaac 480
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gattttgtca aagacaagct gcaagtttgg cgttccgacc ttgaatacgc cttcaacgac 900
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taccccgacc gaaaacctct acggcgaaat cggcgtaacc ggtacaggca aacgctacgg 1920
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gcttggctgg aaccataaaa atgttaacgt tacctttgcc gcagccaatc tgttcaatca 2040
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ttaccgtttc tga 2113

<210> 48
<211> 697
<212> PRT
<213> Neisseria meningitidis

<400> 48
Met Gln Ile Pro Phe His Leu Ala Leu Leu Pro Thr Leu Ile Ile Ala
1 5 10 15

Ser Phe Pro Val Ala Ala Ala Asp Thr Gln Asp Asn Gly Glu His Tyr
20 25 30

Thr Ala Thr Leu Pro Thr Val Ser Val Val Gly Gln Ser Asp Thr Ser
35 40 45

```
Val Leu Lys Gly Tyr Ile Asn Tyr Asp Glu Ala Ala Val Thr Arg Asn
     50                  55                  60

Gly Gln Leu Ile Lys Glu Thr Pro Gln Thr Ile Asp Thr Leu Asn Ile
 65                  70                  75                  80

Gln Lys Asn Lys Asn Tyr Gly Thr Asn Asp Leu Ser Ser Ile Leu Glu
                 85                  90                  95

Gly Asn Ala Gly Ile Asp Ala Ala Tyr Asp Met Arg Gly Glu Ser Ile
            100                 105                 110

Phe Leu Arg Gly Phe Gln Ala Asp Ala Ser Asp Ile Tyr Arg Asp Gly
        115                 120                 125

Val Arg Glu Ser Gly Gln Val Arg Arg Ser Thr Ala Asn Ile Glu Arg
    130                 135                 140

Val Glu Ile Leu Lys Gly Pro Ser Ser Val Leu Tyr Gly Arg Thr Asn
145                 150                 155                 160

Gly Gly Gly Val Ile Asn Met Val Ser Lys Tyr Ala Asn Phe Lys Gln
                165                 170                 175

Ser Arg Asn Ile Gly Thr Val Tyr Gly Ser Trp Ala Asn Arg Ser Leu
            180                 185                 190

Asn Met Asp Ile Asn Glu Val Leu Asn Lys Asn Val Ala Ile Arg Leu
        195                 200                 205

Thr Gly Glu Val Gly Arg Ala Asn Ser Phe Arg Ser Gly Ile Asp Ser
    210                 215                 220

Lys Asn Val Met Val Ser Pro Ser Ile Thr Val Lys Leu Asp Asn Gly
225                 230                 235                 240

Leu Lys Trp Thr Gly Gln Tyr Thr Tyr Asp Asn Val Glu Arg Thr Pro
                245                 250                 255

Asp Arg Ser Pro Thr Lys Ser Val Tyr Asp Arg Phe Gly Leu Pro Tyr
            260                 265                 270

Arg Met Gly Phe Ala His Arg Asn Asp Phe Val Lys Asp Lys Leu Gln
        275                 280                 285

Val Trp Arg Ser Asp Leu Glu Tyr Ala Phe Asn Asp Lys Trp Arg Ala
    290                 295                 300
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Gln Trp Gln Leu Ala His Arg Thr Ala Ala Gln Asp Phe Asp His Phe
305                 310                 315                 320

Tyr Ala Gly Ser Glu Asn Gly Asn Leu Ile Lys Arg Asn Tyr Ala Trp
                325                 330                 335

Gln Gln Thr Asp Asn Lys Thr Leu Ser Ser Asn Leu Thr Leu Asn Gly
            340                 345                 350

Asp Tyr Thr Ile Gly Arg Phe Glu Asn His Leu Thr Val Gly Met Asp
        355                 360                 365

Tyr Ser Arg Glu His Arg Asn Pro Thr Leu Gly Phe Ser Ser Ala Phe
    370                 375                 380

Ser Ala Ser Ile Asn Pro Tyr Asp Arg Ala Ser Trp Pro Ala Ser Gly
385                 390                 395                 400

Arg Leu Gln Pro Ile Leu Thr Gln Asn Arg His Lys Ala Asp Ser Tyr
                405                 410                 415

Gly Ile Phe Val Gln Asn Ile Phe Ser Ala Thr Pro Asp Leu Lys Phe
            420                 425                 430

Val Leu Gly Gly Arg Tyr Asp Lys Tyr Thr Phe Asn Ser Glu Asn Lys
        435                 440                 445

Leu Thr Gly Ser Ser Arg Gln Tyr Ser Gly His Ser Phe Ser Pro Asn
    450                 455                 460

Ile Gly Ala Val Trp Asn Ile Asn Pro Val His Thr Leu Tyr Ala Ser
465                 470                 475                 480

Tyr Asn Lys Gly Phe Ala Pro Tyr Gly Gly Arg Gly Gly Tyr Leu Ser
                485                 490                 495

Ile Asp Thr Leu Ser Ser Ala Val Phe Asn Ala Asp Pro Glu Tyr Thr
            500                 505                 510

Arg Gln Tyr Glu Thr Gly Val Lys Ser Ser Trp Leu Asp Asp Arg Leu
        515                 520                 525

Ser Thr Thr Leu Ser Ala Tyr Gln Ile Glu Arg Phe Asn Ile Arg Tyr
    530                 535                 540

Arg Pro Asp Pro Lys Asn Asn Pro Tyr Ile Tyr Ala Val Ser Gly Lys
545                 550                 555                 560
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His Arg Ser Arg Gly Val Glu Leu Ser Ala Ile Gly Gln Ile Ile Pro
565 570 575

Lys Lys Thr Leu Ser Ala Arg Phe Val Gly Arg Asp Ala Gly Glu Ser
580 585 590

Arg Arg Gln Arg Lys Ser Arg Pro Ser Gly His Pro Phe Glu His Gln
595 600 605

Gln Arg Tyr Arg Gln Pro Val Phe Pro Leu Tyr Pro Asp Arg Lys Pro
610 615 620

Leu Arg Arg Asn Arg Arg Asn Arg Tyr Arg Gln Thr Leu Arg Leu Arg
625 630 635 640

Leu Lys Lys Arg Ser Asp Tyr Ala Ser Arg Leu Cys Pro Ser Cys His
645 650 655

Ala Trp Leu Glu Pro Lys Cys Arg Tyr Leu Cys Arg Ser Gln Ser Val
660 665 670

Gln Ser Lys Ile Leu Ala Phe Gly Leu Tyr Ala Gly Ser Ala Arg Leu
675 680 685

Tyr Cys Pro Gly Lys Leu Pro Phe Leu
690 695

<210> 49
<211> 2112
<212> DNA
<213> Neisseria meningitidis

<400> 49
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gtggtcggac agtccgacac cagcgtactc aaaggctaca tcaactacga cgaagccgcc 180
gttacccgca acggacagct catcaaagaa acgccgcaaa ccatcgatac gctcaatatc 240
cagaaaaaca aaaattacgg tacgaacgat ttgagttcca tcctcgaagg caatgccggc 300
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cttggctgga accataaaaa tgttaacatt acctttgccg cagccaatct gctcaatcaa 2040
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tacagtttct aa 2112

<210> 50
<211> 703
<212> PRT
<213> Neisseria meningitidis

<400> 50
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Ser Phe Pro Val Ala Ala Ala Asp Thr Gln Asp Asn Gly Glu His Tyr
20 25 30

Thr Ala Thr Leu Pro Thr Val Ser Val Val Gly Gln Ser Asp Thr Ser
35 40 45

Val Leu Lys Gly Tyr Ile Asn Tyr Asp Glu Ala Ala Val Thr Arg Asn
50 55 60

Gly Gln Leu Ile Lys Glu Thr Pro Gln Thr Ile Asp Thr Leu Asn Ile
65 70 75 80

Gln Lys Asn Lys Asn Tyr Gly Thr Asn Asp Leu Ser Ser Ile Leu Glu
85 90 95

Gly Asn Ala Gly Ile Asp Ala Ala Tyr Asp Met Arg Gly Glu Ser Ile

100 105 110

Phe Leu Arg Gly Phe Gln Ala Asp Ala Ser Asp Ile Tyr Arg Asp Gly
115 120 125

Val Arg Glu Ser Gly Gln Val Arg Arg Ser Thr Ala Asn Ile Glu Arg
130 135 140

Val Glu Ile Leu Lys Gly Pro Ser Ser Val Leu Tyr Gly Arg Thr Asn
145 150 155 160

Gly Gly Gly Val Ile Asn Met Val Ser Lys Tyr Ala Asn Phe Lys Gln
165 170 175

Ser Arg Asn Ile Gly Ala Val Tyr Gly Ser Trp Ala Asn Arg Ser Leu
180 185 190

Asn Met Asp Ile Asn Glu Val Leu Asn Lys Asn Val Ala Ile Arg Leu
195 200 205

Thr Gly Glu Val Gly Arg Ala Asn Ser Phe Arg Ser Gly Ile Asp Ser
210 215 220

Lys Asn Val Met Val Ser Pro Ser Ile Thr Val Lys Leu Asp Asn Gly
225 230 235 240

Leu Lys Trp Thr Gly Gln Tyr Thr Tyr Asp Asn Val Glu Arg Thr Pro
245 250 255

Asp Arg Ser Pro Thr Lys Ser Val Tyr Asp Arg Phe Gly Leu Pro Tyr
260 265 270

Arg Met Gly Phe Ala His Arg Asn Asp Phe Val Lys Asp Lys Leu Gln
275 280 285

Val Trp Arg Ser Asp Leu Glu Tyr Ala Phe Asn Asp Lys Trp Arg Ala
290 295 300

Gln Trp Gln Leu Ala His Arg Thr Ala Ala Gln Asp Phe Asp His Phe
305 310 315 320

Tyr Ala Gly Ser Glu Asn Gly Asn Leu Ile Lys Arg Asn Tyr Ala Trp
325 330 335

Gln Gln Thr Asp Asn Lys Thr Leu Ser Ser Asn Phe Thr Leu Asn Gly
340 345 350

Asp Tyr Thr Ile Gly Arg Phe Glu Asn His Leu Thr Val Gly Met Asp

355 360 365

Tyr Ser Arg Glu His Arg Asn Pro Thr Leu Gly Tyr Ser Arg Ala Phe
370 375 380

Thr Ala Ser Ile Asp Pro Tyr Asp Arg Ala Ser Trp Pro Ala Ser Gly
385 390 395 400

Arg Leu Gln Pro Ile Leu Thr Gln Asn Arg His Lys Ala Asp Ser Tyr
405 410 415

Gly Ile Phe Val Gln Asn Ile Phe Ser Ala Thr Pro Asp Leu Lys Phe
420 425 430

Val Leu Gly Gly Arg Tyr Asp Lys Tyr Thr Phe Asn Ser Glu Asn Lys
435 440 445

Leu Thr Gly Ser Ser Arg Gln Tyr Ser Gly His Ser Phe Ser Pro Asn
450 455 460

Ile Gly Ala Val Trp Asn Ile Asn Pro Val His Thr Leu Tyr Ala Ser
465 470 475 480

Tyr Asn Lys Gly Phe Ala Pro Tyr Gly Gly Arg Gly Gly Tyr Leu Ser
485 490 495

Ile Asn Thr Ser Ser Ser Ala Val Phe Asn Ala Asp Pro Glu Tyr Thr
500 505 510

Arg Gln Tyr Glu Thr Gly Val Lys Ser Ser Trp Leu Asp Asp Arg Leu
515 520 525

Ser Thr Thr Leu Ser Ala Tyr Gln Ile Glu Arg Phe Asn Ile Arg Tyr
530 535 540

Arg Pro Asp Glu Gln Asn Asp Pro Tyr Thr Trp Ala Val Gly Gly Lys
545 550 555 560

His Arg Ser Arg Gly Val Glu Leu Ser Ala Ile Gly Gln Ile Ile Pro
565 570 575

Lys Lys Leu Tyr Leu Arg Gly Ser Leu Gly Val Met Gln Ala Lys Val
580 585 590

Val Glu Asp Lys Glu Asn Pro Asp Arg Val Gly Ile His Leu Asn Asn
595 600 605

Thr Ser Asn Val Thr Gly Asn Leu Phe Phe Arg Tyr Thr Pro Thr Glu

610 615 620

Asn Leu Tyr Gly Glu Ile Gly Val Thr Gly Thr Gly Lys Arg Tyr Gly
625 630 635 640

Tyr Asn Ser Arg Asn Lys Glu Val Thr Thr Leu Pro Gly Phe Ala Arg
645 650 655

Val Asp Ala Met Leu Gly Trp Asn His Lys Asn Val Asn Ile Thr Phe
660 665 670

Ala Ala Ala Asn Leu Leu Asn Gln Lys Tyr Trp Arg Ser Asp Ala Met
675 680 685

Pro Gly Ala Pro Arg Thr Tyr Thr Ala Arg Val Asn Tyr Ser Phe
690 695 700

<210> 51
<211> 2112
<212> DNA
<213> Neisseria meningitidis

<400> 51
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atcgacgctg cctacgatat gcgcggtgaa agcattttcc tgcgcggttt tcaagccgac 360
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aacaaaaacg tcgccatccg tctcaccggc gaagtcgggc gcgccaattc gttccgcagc 660
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agcagcgcct tttccgcctc catcaacccc tacgaccgcg caagctggcc ggcttcgggc 1200
agattgcagc ctattctgac ccaaaaccgc cacaaagccg actcctacgg catctttgtg 1260
caaaacatct tctccgccac gcccgatttg aaattcgtcc tcggcggccg ttacgacaaa 1320
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tataacaaag gcttcgcgcc ttatggcgga cgcggcggct atttgagcat cgatacgttg 1500
tcttccgccg tgttcaacgc cgaccccgag tacacccgcc aatacgaaac cggcgtgaaa 1560
agcagttggc tggacgaccg cctcagcact acgttgtctg cctaccaaat cgaacgcttc 1620
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caccgttcgc gcggcgtgga attgtccgcc atcgggcaaa tcatccccaa aaaactctat 1740
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cttggctgga accataaaaa tgttaacgtt acctttgccg cagccaatct gctcaatcaa 2040
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<210> 52
<211> 703
<212> PRT
<213> Neisseria meningitidis

<400> 52

Met	Lys	Ile	Ser	Phe	His	Leu	Ala	Leu	Leu	Pro	Thr	Leu	Ile	Ile	Ala
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Thr	Ala	Thr	Leu	Pro	Thr	Val	Ser	Val	Val	Gly	Gln	Ser	Asp	Thr	Ser
		35					40					45			
Val	Leu	Lys	Gly	Tyr	Ile	Asn	Tyr	Asp	Glu	Ala	Ala	Val	Thr	Arg	Asn
	50					55					60				
Gly	Gln	Leu	Ile	Lys	Glu	Thr	Pro	Gln	Thr	Ile	Asp	Thr	Leu	Asn	Ile
65					70					75					80
Gln	Lys	Asn	Lys	Asn	Tyr	Gly	Thr	Asn	Asp	Leu	Ser	Ser	Ile	Leu	Glu
				85					90					95	
Gly	Asn	Ala	Gly	Ile	Asp	Ala	Ala	Tyr	Asp	Met	Arg	Gly	Glu	Ser	Ile
			100					105					110		
Phe	Leu	Arg	Gly	Phe	Gln	Ala	Asp	Ala	Ser	Asp	Ile	Tyr	Arg	Asp	Gly
		115					120					125			
Val	Arg	Glu	Ser	Gly	Gln	Val	Arg	Arg	Ser	Thr	Ala	Asn	Ile	Glu	Arg
	130					135					140				
Val	Glu	Ile	Leu	Lys	Gly	Pro	Ser	Ser	Val	Leu	Tyr	Gly	Arg	Thr	Asn
145					150					155					160

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Gly Gly Gly Val Ile Asn Met Val Ser Lys Tyr Ala Asn Phe Lys Gln
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Ser Arg Asn Ile Gly Ala Val Tyr Gly Ser Trp Ala Asn Arg Ser Leu
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Asn Met Asp Ile Asn Glu Val Leu Asn Lys Asn Val Ala Ile Arg Leu
        195                 200                 205

Thr Gly Glu Val Gly Arg Ala Asn Ser Phe Arg Ser Gly Ile Asp Ser
    210                 215                 220

Lys Asn Val Met Val Ser Pro Ser Ile Thr Val Lys Leu Asp Asn Gly
225                 230                 235                 240

Leu Lys Trp Thr Gly Gln Tyr Thr Tyr Asp Asn Val Glu Arg Thr Pro
                245                 250                 255

Asp Arg Ser Pro Thr Lys Ser Val Tyr Asp Arg Phe Gly Leu Pro Tyr
            260                 265                 270

Arg Met Gly Phe Ala His Arg Asn Asp Phe Val Lys Asp Lys Leu Gln
        275                 280                 285

Val Trp Arg Ser Asp Leu Glu Tyr Ala Phe Asn Asp Lys Trp Arg Ala
    290                 295                 300

Gln Trp Gln Leu Ala His Arg Thr Ala Ala Gln Asp Phe Asp His Phe
305                 310                 315                 320

Tyr Ala Gly Ser Glu Asn Gly Asn Leu Ile Lys Arg Asn Tyr Ala Trp
                325                 330                 335

Gln Gln Thr Asp Asn Lys Thr Leu Ser Ser Asn Leu Thr Leu Asn Gly
            340                 345                 350

Asp Tyr Thr Ile Gly Arg Phe Glu Asn His Leu Thr Val Gly Met Asp
        355                 360                 365

Tyr Ser Arg Glu His Arg Asn Pro Thr Leu Gly Phe Ser Ser Ala Phe
    370                 375                 380

Ser Ala Ser Ile Asn Pro Tyr Asp Arg Ala Ser Trp Pro Ala Ser Gly
385                 390                 395                 400

Arg Leu Gln Pro Ile Leu Thr Gln Asn Arg His Lys Ala Asp Ser Tyr
                405                 410                 415
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Gly Ile Phe Val Gln Asn Ile Phe Ser Ala Thr Pro Asp Leu Lys Phe
            420                 425                 430

Val Leu Gly Gly Arg Tyr Asp Lys Tyr Thr Phe Asn Ser Glu Asn Lys
        435                 440                 445

Leu Thr Gly Ser Ser Arg Gln Tyr Ser Gly His Ser Phe Ser Pro Asn
    450                 455                 460

Ile Gly Ala Val Trp Asn Ile Asn Pro Val His Thr Leu Tyr Ala Ser
465                 470                 475                 480

Tyr Asn Lys Gly Phe Ala Pro Tyr Gly Gly Arg Gly Gly Tyr Leu Ser
                485                 490                 495

Ile Asp Thr Leu Ser Ser Ala Val Phe Asn Ala Asp Pro Glu Tyr Thr
            500                 505                 510

Arg Gln Tyr Glu Thr Gly Val Lys Ser Ser Trp Leu Asp Asp Arg Leu
        515                 520                 525

Ser Thr Thr Leu Ser Ala Tyr Gln Ile Glu Arg Phe Asn Ile Arg Tyr
    530                 535                 540

Arg Pro Asp Pro Lys Asn Asn Pro Tyr Ile Tyr Ala Val Ser Gly Lys
545                 550                 555                 560

His Arg Ser Arg Gly Val Glu Leu Ser Ala Ile Gly Gln Ile Ile Pro
                565                 570                 575

Lys Lys Leu Tyr Leu Arg Gly Ser Leu Gly Val Met Gln Ala Lys Val
            580                 585                 590

Val Glu Asp Lys Glu Asn Pro Asp Arg Val Gly Ile His Leu Asn Asn
        595                 600                 605

Thr Ser Asn Val Thr Gly Asn Leu Phe Phe Arg Tyr Thr Pro Thr Glu
    610                 615                 620

Asn Leu Tyr Gly Glu Ile Gly Val Thr Gly Thr Gly Lys Arg Tyr Gly
625                 630                 635                 640

Tyr Asn Ser Arg Asn Lys Glu Val Thr Thr Leu Pro Gly Phe Ala Arg
                645                 650                 655

Val Asp Ala Met Leu Gly Trp Asn His Lys Asn Val Asn Val Thr Phe
            660                 665                 670
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Ala Ala Ala Asn Leu Leu Asn Gln Lys Tyr Trp Arg Ser Asp Ser Met
675 680 685

Pro Gly Asn Pro Arg Gly Tyr Thr Ala Arg Val Asn Tyr Arg Phe
690 695 700

<210> 53
<211> 693
<212> DNA
<213> Neisseria meningitidis

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ccacccttt ttcaagacca cgcgttagca aactggctgg cggcaaacga aacgattttg 180
cggaacacgc ttgctaaaat gcccgtgcat cctgtttccc acccaaactt acccgagtgg 240
atttggtatc ggggaataaa gaccaagctg gatacccaca gccaaagcca tatccgtatc 300
acgtcgtctg aaatcctgct tccccgaaaa gaaaccgccg cacaaatcga ccacctgcgc 360
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gaaacaggac tgactcccgc tgccacagac ctgagcaacg ccaaaacctt ttggggcgta 480
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gccgactatg tctgcatcca cgaactctgc cacctccgcc accccgacca cagtccgcgc 600
ttttggcatt tggtgaacac gctgacgccg cataccgaca atgctaaaag ttggctgaag 660
gcgcacgggc gggaattgtt tgtgctgggg taa 693

<210> 54
<211> 230
<212> PRT
<213> Neisseria meningitidis

<400> 54
Met Lys Arg Phe Thr Tyr Thr Leu Ser Asp Gly Leu Cys Ile Glu Ile
1 5 10 15

Glu Leu Lys Arg Ser Ala Lys Lys Asn Leu Ile Leu Arg Pro Val Asn
20 25 30

Met Gln Thr Val Ser Ile Asn Val Pro Pro Phe Phe Gln Asp His Ala
35 40 45

Leu Ala Asn Trp Leu Ala Ala Asn Glu Thr Ile Leu Arg Asn Thr Leu
50 55 60

Ala Lys Met Pro Val His Pro Val Ser His Pro Asn Leu Pro Glu Trp
65 70 75 80

Ile Trp Tyr Arg Gly Ile Lys Thr Lys Leu Asp Thr His Ser Gln Ser
85 90 95

His Ile Arg Ile Thr Ser Ser Glu Ile Leu Leu Pro Arg Lys Glu Thr
100 105 110

Ala Ala Gln Ile Asp His Leu Arg Arg Leu Leu Asn Glu Arg Ala Arg
115 120 125

Glu Tyr Leu Leu Pro Arg Leu Glu Lys His Ala Ala Glu Thr Gly Leu
130 135 140

Thr Pro Ala Ala Thr Asp Leu Ser Asn Ala Lys Thr Phe Trp Gly Val
145 150 155 160

Cys Arg Pro His Thr Gly Ile Arg Leu Asn Trp Arg Leu Ile Gly Thr
165 170 175

Pro Glu Tyr Val Ala Asp Tyr Val Cys Ile His Glu Leu Cys His Leu
180 185 190

Arg His Pro Asp His Ser Pro Arg Phe Trp His Leu Val Asn Thr Leu
195 200 205

Thr Pro His Thr Asp Asn Ala Lys Ser Trp Leu Lys Ala His Gly Arg
210 215 220

Glu Leu Phe Val Leu Gly
225 230

<210> 55
<211> 546
<212> DNA
<213> Neisseria meningitidis

<400> 55
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cgtaacgatt acggcctgac cgttaaaacc gacggcacgg gcaaaggcaa tatgccgctg 180
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attgtgtttg agccttttt catcagcaac gacactgatt tggccttgtt taagacgact 480
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gtatga 546

<210> 56
<211> 181
<212> PRT
<213> Neisseria meningitidis

<400> 56

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Met Ser Lys Ile Ile Val Leu Thr Ala Gly His Ser Asn Thr Asp Pro
  1               5                  10                  15

Gly Ala Val Asn Gly Ser Asp Arg Glu Ala Asp Leu Ala Gln Asp Met
             20                  25                  30

Arg Asn Ile Val Ala Ser Ile Leu Arg Asn Asp Tyr Gly Leu Thr Val
         35                  40                  45

Lys Thr Asp Gly Thr Gly Lys Gly Asn Met Pro Leu Arg Glu Ala Val
     50                  55                  60

Lys Leu Ile Arg Gly Ser Asp Val Ala Ile Glu Phe His Thr Asn Ala
 65                  70                  75                  80

Ala Val Ser Lys Ala Ala Thr Gly Ile Glu Ala Leu Ser Thr Val Lys
                 85                  90                  95

Asn Lys Arg Trp Cys Gln Val Leu Ser Lys Ala Val Ala Lys Lys Thr
            100                 105                 110

Gly Trp Lys Leu Arg Gly Glu Asp Gly Phe Lys Pro Asp Asn Ala Gly
        115                 120                 125

Gln His Ser Arg Leu Ala Tyr Ala Gln Ala Gly Gly Ile Val Phe Glu
    130                 135                 140

Pro Phe Phe Ile Ser Asn Asp Thr Asp Leu Ala Leu Phe Lys Thr Thr
145                 150                 155                 160

Lys Trp Gly Ile Cys Arg Ala Ile Ala Asp Ala Ile Ala Met Glu Leu
                165                 170                 175

Gly Ala Ala Arg Val
            180
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<210> 57
<211> 237
<212> DNA
<213> Neisseria meningitidis

<400> 57
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gcggagattt gggcggtgta tttgggcatt gtcggcggct atgcggtggc gcgttcgttg 180
gtcagcgtca aacgtcagga ggtcgagaat gaatctcgtg aaactgctgg cgaataa 237

<210> 58
<211> 78
<212> PRT
<213> Neisseria meningitidis

<400> 58
Met Arg Ile Leu Asp Ile Phe Lys Asn Pro Ala Thr Gly Asn Val Ser
1 5 10 15

His Ser Lys Leu Trp Ala Asn Val Ala Cys Ala Ala Gly Thr Val Lys
20 25 30

Phe Val Met Leu Pro Asp Pro Ser Ala Glu Ile Trp Ala Val Tyr Leu
35 40 45

Gly Ile Val Gly Gly Tyr Ala Val Ala Arg Ser Leu Val Ser Val Lys
50 55 60

Arg Gln Glu Val Glu Asn Glu Ser Arg Glu Thr Ala Gly Glu
65 70 75

<210> 59
<211> 468
<212> DNA
<213> Neisseria meningitidis

<400> 59
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gcggtgtcgc accatcaagg ctacaagtcg gcttttgcga agcagcaggc ggtcattgag 180
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ctggaacagg cgcgtgcgga agctaaaaaa tatgaagtca aggcgcacgc cgtcggcatg 300
gctttggcga aaaaacaggc ggaagtcagc cgtctgaaaa cggaaaataa aaaggaaatc 360
gaaaatgtcc ttactcaaga ccgtaaaaat gcaggcggcg gttgtattga cggctttggc 420
catcacggct tgcagctcta caagcgcgcc ctcggctacg gaaattaa 468

<210> 60
<211> 155
<212> PRT
<213> Neisseria meningitidis

<400> 60

Met Arg Trp Arg Val Arg Trp Ser Ala Ser Asn Val Arg Arg Ser Arg
1 5 10 15

Met Asn Leu Val Lys Leu Leu Ala Asn Asn Trp Gln Pro Ile Ala Ile
20 25 30

Ile Ala Leu Val Gly Thr Gly Leu Ala Val Ser His His Gln Gly Tyr
35 40 45

Lys Ser Ala Phe Ala Lys Gln Gln Ala Val Ile Glu Lys Met Lys Arg
50 55 60

Asp Lys Ala Gln Ala Leu Leu Leu Ser Ala Gln Asn Tyr Ala Arg Glu
65 70 75 80

Leu Glu Gln Ala Arg Ala Glu Ala Lys Lys Tyr Glu Val Lys Ala His
85 90 95

Ala Val Gly Met Ala Leu Ala Lys Lys Gln Ala Glu Val Ser Arg Leu
100 105 110

Lys Thr Glu Asn Lys Lys Glu Ile Glu Asn Val Leu Thr Gln Asp Arg
115 120 125

Lys Asn Ala Gly Gly Gly Cys Ile Asp Gly Phe Gly His His Gly Leu
130 135 140

Gln Leu Tyr Lys Arg Ala Leu Gly Tyr Gly Asn
145 150 155

<210> 61
<211> 306
<212> DNA
<213> Neisseria meningitidis

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acggcttgca gctctacaag cgcgccctcg gctacggaaa ttaaggttgt cgaaaaggcg 120
gtcatgccga caccgcctgc cgcgttgatg gtcgcgccgg tgcgcccgaa tccgccgaaa 180
gacggcaaga cggccacgct gttggaacac gccgccgagt ttggcggcta tgttgccgaa 240
cttgaaaacc aaaatcaggc ttggcgcgac tgggcgggca atcactcccg caaagtcgga 300
aactga 306

<210> 62
<211> 101

<212> PRT
<213> Neisseria meningitidis

<400> 62
Met Ser Leu Leu Lys Thr Val Lys Met Gln Ala Ala Val Val Leu Thr
1 5 10 15

Ala Leu Ala Ile Thr Ala Cys Ser Ser Thr Ser Ala Pro Ser Ala Thr
20 25 30

Glu Ile Lys Val Val Glu Lys Ala Val Met Pro Thr Pro Pro Ala Ala
35 40 45

Leu Met Val Ala Pro Val Arg Pro Asn Pro Pro Lys Asp Gly Lys Thr
50 55 60

Ala Thr Leu Leu Glu His Ala Ala Glu Phe Gly Gly Tyr Val Ala Glu
65 70 75 80

Leu Glu Asn Gln Asn Gln Ala Trp Arg Asp Trp Ala Gly Asn His Ser
85 90 95

Arg Lys Val Gly Asn
100

<210> 63
<211> 348
<212> DNA
<213> Neisseria meningitidis

<400> 63
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gtttctccta tgaatgagta cacgttttct taccgcttta acggcaagtc ctggtcattg 180
agcatttggg cggacaaccc tgaagaagcc agggcgaaat ttcgggctgc acgagaaaat 240
gcgcactatg acggcgaagt tgtagcaaag gtttatacat ttgtaaatat ttcgtgggtt 300
aagaaattgt acaagcggac aaaatattta atgggtatca aagaatga 348

<210> 64
<211> 115
<212> PRT
<213> Neisseria meningitidis

<400> 64
Val Leu Ala Val Leu Leu Ala Gly Val Ala Phe Ala Leu Ser Asp Asp
1 5 10 15

Phe Met Val Gly Cys Phe Gln Thr Pro Thr Val Phe Ala Phe Cys Val
20 25 30

Phe Ile Asp Phe Lys Ile His Lys Val Ser Pro Met Asn Glu Tyr Thr
35 40 45

Phe Ser Tyr Arg Phe Asn Gly Lys Ser Trp Ser Leu Ser Ile Trp Ala
50 55 60

Asp Asn Pro Glu Glu Ala Arg Ala Lys Phe Arg Ala Ala Arg Glu Asn
65 70 75 80

Ala His Tyr Asp Gly Glu Val Val Ala Lys Val Tyr Thr Phe Val Asn
85 90 95

Ile Ser Trp Val Lys Lys Leu Tyr Lys Arg Thr Lys Tyr Leu Met Gly
100 105 110

Ile Lys Glu
115

<210> 65
<211> 1404
<212> DNA
<213> Neisseria meningitidis

<400> 65
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ctacccgttt cacttttttac cttgccacta tccctttccc catccgtttc ggcttttacg 180
ctgcctgaag catggcgggc ggcgcagcaa cattcggctg attttcaagc gtcccattac 240
cagcgtgatg cagtgcgcgc acggcaacaa caagccaagg ccgcattcct tccccatgta 300
tccgccaatg ccagctacca gcgccagccg ccatcgattt cttccacccg cgaaacacag 360
ggatggagcg tgcaggtggg acaaacctta tttgacgctg ccaaatttgc acaataccgc 420
caaagcaggt tcgatacgca ggctgcagaa cagcgtttcg atgcggcacg cgaagaattg 480
ctgttgaaag ttgccgaaag ttatttcaac gttttactca gccgagacac cgttgccgcc 540
catgcggcgg aaaaagaggc ttatgcccag caggtaaggc aggcgcaggc tttattcaat 600
aaaggtgctg ccaccgcgct ggatattcac gaagccaaag ccggttacga caatgccctg 660
gcccaagaaa tcgccgtatt ggctgagaaa caaacctatg aaaaccagtt gaacgactac 720
accggcctgg acagcaaaca aatcgaggcc atagataccg ccaacctgtt ggcacgctat 780
ctgcccaagc tggaacgtta cagtctggat gaatggcagc gcattgcctt atccaacaat 840
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caatacgggg ctgccgaagc acagctgacc gcaaccgagc ggcacatcaa actcgccgta 1140
cgccaggctt ataccgaaag cggtgcggcg cgttaccaaa tcatggcgca agaacgggtt 1200

ttggaaagca gccgtttgaa actgaaatcg accgaaaccg gccaacaata cggcatccgc 1260
aaccggctgg aagtaatacg ggcgcggcag gaagtcgccc aagcagaaca gaaactggct 1320
caagcacggt ataaattcat gctggcttat ttgcgcttgg tgaaagagag cgggttaggg 1380
ttggaaacgg tatttgcgga ataa 1404

<210> 66
<211> 467
<212> PRT
<213> Neisseria meningitidis

<400> 66

Met	Thr	Leu	Leu	Asn	Leu	Met	Ile	Met	Gln	Asp	Tyr	Gly	Ile	Ser	Val
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Cys	Leu	Thr	Leu	Thr	Pro	Tyr	Leu	Gln	His	Glu	Leu	Phe	Ser	Ala	Met
			20					25					30		
Lys	Ser	Tyr	Phe	Ser	Lys	Tyr	Ile	Leu	Pro	Val	Ser	Leu	Phe	Thr	Leu
		35					40					45			
Pro	Leu	Ser	Leu	Ser	Pro	Ser	Val	Ser	Ala	Phe	Thr	Leu	Pro	Glu	Ala
	50					55					60				
Trp	Arg	Ala	Ala	Gln	Gln	His	Ser	Ala	Asp	Phe	Gln	Ala	Ser	His	Tyr
65					70					75					80
Gln	Arg	Asp	Ala	Val	Arg	Ala	Arg	Gln	Gln	Gln	Ala	Lys	Ala	Ala	Phe
				85					90					95	
Leu	Pro	His	Val	Ser	Ala	Asn	Ala	Ser	Tyr	Gln	Arg	Gln	Pro	Pro	Ser
			100					105					110		
Ile	Ser	Ser	Thr	Arg	Glu	Thr	Gln	Gly	Trp	Ser	Val	Gln	Val	Gly	Gln
		115					120					125			
Thr	Leu	Phe	Asp	Ala	Ala	Lys	Phe	Ala	Gln	Tyr	Arg	Gln	Ser	Arg	Phe
	130					135					140				
Asp	Thr	Gln	Ala	Ala	Glu	Gln	Arg	Phe	Asp	Ala	Ala	Arg	Glu	Glu	Leu
145					150					155					160
Leu	Leu	Lys	Val	Ala	Glu	Ser	Tyr	Phe	Asn	Val	Leu	Leu	Ser	Arg	Asp
				165					170					175	
Thr	Val	Ala	Ala	His	Ala	Ala	Glu	Lys	Glu	Ala	Tyr	Ala	Gln	Gln	Val
			180					185					190		
Arg	Gln	Ala	Gln	Ala	Leu	Phe	Asn	Lys	Gly	Ala	Ala	Thr	Ala	Leu	Asp

195 200 205

Ile His Glu Ala Lys Ala Gly Tyr Asp Asn Ala Leu Ala Gln Glu Ile
210 215 220

Ala Val Leu Ala Glu Lys Gln Thr Tyr Glu Asn Gln Leu Asn Asp Tyr
225 230 235 240

Thr Gly Leu Asp Ser Lys Gln Ile Glu Ala Ile Asp Thr Ala Asn Leu
245 250 255

Leu Ala Arg Tyr Leu Pro Lys Leu Glu Arg Tyr Ser Leu Asp Glu Trp
260 265 270

Gln Arg Ile Ala Leu Ser Asn Asn His Glu Tyr Arg Met Gln Gln Leu
275 280 285

Ala Leu Gln Ser Ser Gly Gln Ala Leu Arg Ala Ala Gln Asn Ser Arg
290 295 300

Tyr Pro Thr Val Ser Ala His Val Gly Tyr Gln Asn Asn Leu Tyr Thr
305 310 315 320

Ser Ser Ala Gln Asn Asn Asp Tyr His Tyr Arg Gly Lys Gly Met Ser
325 330 335

Val Gly Val Gln Leu Asn Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser
340 345 350

Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln
355 360 365

Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr
370 375 380

Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val
385 390 395 400

Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln
405 410 415

Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val
420 425 430

Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu
435 440 445

Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val

450 455 460

Phe Ala Glu
465

<210> 67
<211> 1404
<212> DNA
<213> Neisseria meningitidis

<400> 67
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ctacccgttt cacttttac cttgccacta tccctttccc catccgtttc ggcttttacg 180
ctgcctgaag catggcgggc ggcgcagcaa cattcggctg attttcaagc gtcccattac 240
cagcgtgatg cagtgcgcgc acggcaacaa caagccaagg ccgcattcct tccccatgta 300
tccgccaatg ccagctacca gcgccagccg ccatcgattt cttccacccg cgaaacacag 360
ggatggagcg tgcaggtggg acaaacctta tttgacgctg ccaaatttgc acaataccgc 420
caaagcaggt tcgatacgca ggctgcagaa cagcgtttcg atgcggcacg cgaagaattg 480
ctgttgaaag ttgccgaaag ttatttcaac gttttactca gccgagacac cgttgccgcc 540
catgcggcgg aaaaagaggc ttatgcccag caggtaaggc aggcgcaggc tttattcaat 600
aaaggtgctg ccaccgcgct ggatattcac gaagccaaag ccggttacga caatgccctg 660
gcccaagaaa tcgccgtatt ggctgagaaa caaacctatg aaaaccagtt gaacgactac 720
accggcctgg acagcaaaca aatcgaggcc atagataccg ccaacctgtt ggcacgctat 780
ctgcccaagc tggaacgtta cagtctggat gaatggcagc gcattgcctt atccaacaat 840
catgaatacc ggatgcagca gcttgccctg caaagcagcg gacaggcgct tcgggcagca 900
cagaacagcc gctatcccac cgtttctgcc catgtcggct atcagaataa cctctacact 960
tcatctgcgc agaataatga ctaccactat cggggcaaag ggatgagcgt cggcgtacag 1020
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caatacgggg ctgccgaagc acagctgacc gcaaccgagc ggcacatcaa actcgccgta 1140
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ttggaaacgg tatttgcgga ataa 1404

<210> 68
<211> 467
<212> PRT
<213> Neisseria meningitidis

<400> 68
Met Thr Leu Leu Asn Leu Met Ile Met Gln Asp Tyr Gly Ile Ser Val
1 5 10 15

Cys Leu Thr Leu Thr Pro Tyr Leu Gln His Glu Leu Phe Ser Ala Met
20 25 30

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Lys Ser Tyr Phe Ser Lys Tyr Ile Leu Pro Val Ser Leu Phe Thr Leu
         35                  40                  45

Pro Leu Ser Leu Ser Pro Ser Val Ser Ala Phe Thr Leu Pro Glu Ala
     50                  55                  60

Trp Arg Ala Ala Gln Gln His Ser Ala Asp Phe Gln Ala Ser His Tyr
 65                  70                  75                  80

Gln Arg Asp Ala Val Arg Ala Arg Gln Gln Gln Ala Lys Ala Ala Phe
                 85                  90                  95

Leu Pro His Val Ser Ala Asn Ala Ser Tyr Gln Arg Gln Pro Pro Ser
            100                 105                 110

Ile Ser Ser Thr Arg Glu Thr Gln Gly Trp Ser Val Gln Val Gly Gln
        115                 120                 125

Thr Leu Phe Asp Ala Ala Lys Phe Ala Gln Tyr Arg Gln Ser Arg Phe
    130                 135                 140

Asp Thr Gln Ala Ala Glu Gln Arg Phe Asp Ala Ala Arg Glu Glu Leu
145                 150                 155                 160

Leu Leu Lys Val Ala Glu Ser Tyr Phe Asn Val Leu Leu Ser Arg Asp
                165                 170                 175

Thr Val Ala Ala His Ala Ala Glu Lys Glu Ala Tyr Ala Gln Gln Val
            180                 185                 190

Arg Gln Ala Gln Ala Leu Phe Asn Lys Gly Ala Ala Thr Ala Leu Asp
        195                 200                 205

Ile His Glu Ala Lys Ala Gly Tyr Asp Asn Ala Leu Ala Gln Glu Ile
    210                 215                 220

Ala Val Leu Ala Glu Lys Gln Thr Tyr Glu Asn Gln Leu Asn Asp Tyr
225                 230                 235                 240

Thr Gly Leu Asp Ser Lys Gln Ile Glu Ala Ile Asp Thr Ala Asn Leu
                245                 250                 255

Leu Ala Arg Tyr Leu Pro Lys Leu Glu Arg Tyr Ser Leu Asp Glu Trp
            260                 265                 270

Gln Arg Ile Ala Leu Ser Asn Asn His Glu Tyr Arg Met Gln Gln Leu
        275                 280                 285
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Ala Leu Gln Ser Ser Gly Gln Ala Leu Arg Ala Ala Gln Asn Ser Arg
290 295 300

Tyr Pro Thr Val Ser Ala His Val Gly Tyr Gln Asn Asn Leu Tyr Thr
305 310 315 320

Ser Ser Ala Gln Asn Asn Asp Tyr His Tyr Arg Gly Lys Gly Met Ser
325 330 335

Val Gly Val Gln Leu Asn Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser
340 345 350

Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln
355 360 365

Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr
370 375 380

Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val
385 390 395 400

Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln
405 410 415

Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val
420 425 430

Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu
435 440 445

Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val
450 455 460

Phe Ala Glu
465

<210> 69
<211> 1400
<212> DNA
<213> Neisseria meningitidis

<400> 69
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ccgtttcact ttttaccttg ccactatccc tttccccatc cgtttcggct tttacgctgc 180
ctgaagcatg gcgggcggcg cagcaacatt cggctgattt tcaagcgtcc cattaccagc 240

gtgatgcagt gcgcgcacgg caacaacaag ccaaggccgc attccttccc catgtatccg 300
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ggagcgtgca ggtgggacaa accttatttg actctgccaa atttgcacaa taccgccaaa 420
gcaggttcga tacgcaggct gcagaacagc gtttcgatgc ggcacgcgaa gaattgctgt 480
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aagaaatcgc cgtattggct gagaaacaaa cctatgaaaa ccagttgaac gactacaccg 720
gcctggacag caaacaaatc gaggccatag ataccgccaa cctgttggca cgctatctgc 780
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<210> 70
<211> 450
<212> PRT
<213> Neisseria meningitidis

<400> 70
Met Thr Leu Leu Asn Leu Ile Cys Lys Ile Thr Val Phe Pro Phe Ala
1 5 10 15

His Arg Pro Ile Cys Asn Met Asn Tyr Phe Arg Leu Asn Pro Ile Phe
20 25 30

Pro Asn Ile Ser Tyr Pro Phe His Phe Leu Pro Cys His Tyr Pro Phe
35 40 45

Pro His Pro Phe Arg Leu Leu Arg Cys Leu Lys His Gly Gly Arg Arg
50 55 60

Ser Asn Ile Arg Leu Ile Phe Lys Arg Pro Ile Thr Ser Val Met Gln
65 70 75 80

Cys Ala His Gly Asn Asn Lys Pro Arg Pro His Ser Phe Pro Met Tyr
85 90 95

Pro Pro Met Pro Ala Thr Ser Ala Ser Arg His Arg Phe Leu Pro Pro
100 105 110

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Ala Lys His Arg Asp Gly Ala Cys Arg Trp Asp Lys Pro Tyr Leu Thr
        115                 120                 125

Leu Pro Asn Leu His Asn Thr Ala Lys Ala Gly Ser Ile Arg Arg Leu
    130                 135                 140

Gln Asn Ser Val Ser Met Arg His Ala Lys Asn Cys Cys Lys Leu Pro
145                 150                 155                 160

Lys Val Ile Ser Thr Phe Tyr Ser Ala Glu Thr Pro Leu Pro Pro Met
                165                 170                 175

Arg Arg Lys Lys Arg Leu Met Pro Ser Arg Gly Arg Arg Arg Leu Tyr
            180                 185                 190

Ser Ile Lys Val Leu Pro Pro Arg Ile Phe Thr Lys Pro Lys Pro Val
        195                 200                 205

Thr Thr Met Pro Trp Pro Lys Lys Ser Pro Tyr Trp Leu Arg Asn Lys
    210                 215                 220

Pro Met Lys Thr Ser Thr Thr Thr Pro Ala Trp Thr Ala Asn Lys Ser
225                 230                 235                 240

Arg Pro Ile Pro Pro Thr Cys Trp His Ala Ile Cys Pro Ser Trp Asn
                245                 250                 255

Val Thr Val Trp Met Asn Gly Ser Ala Leu Pro Tyr Pro Thr Ile Met
            260                 265                 270

Asn Thr Gly Cys Ser Ser Leu Pro Cys Lys Ala Ala Asp Arg Arg Phe
        275                 280                 285

Gly Gln His Arg Thr Ala Ala Ile Pro Pro Phe Leu Pro Met Ser Ala
    290                 295                 300

Ile Arg Ile Thr Ser Thr Leu His Leu Arg Arg Ile Met Thr Thr Thr
305                 310                 315                 320

Ile Gly Ala Lys Gly Ala Ser Ala Tyr Ser Ile Cys Arg Phe Ile Pro
                325                 330                 335

Ala Glu Asn Cys Arg Ala Lys Ser Met Lys Pro Lys Arg Asn Thr Gly
            340                 345                 350

Leu Pro Lys His Ser Pro Gln Pro Ser Gly Thr Ser Asn Ser Pro Tyr
        355                 360                 365
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Ala Arg Leu Ile Pro Lys Ala Val Arg Arg Val Thr Lys Ser Trp Arg
370 375 380

Lys Asn Gly Phe Trp Lys Ala Ala Val Asn Asn Arg Pro Lys Pro Ala
385 390 395 400

Asn Asn Thr Ala Ser Ala Thr Gly Trp Lys Tyr Gly Arg Gly Arg Lys
405 410 415

Ser Pro Lys Gln Asn Arg Asn Trp Leu Lys His Gly Ile Asn Ser Cys
420 425 430

Trp Leu Ile Cys Ala Trp Lys Arg Ala Gly Gly Trp Lys Arg Tyr Leu
435 440 445

Arg Asn
450

<210> 71
<211> 1404
<212> DNA
<213> Neisseria meningitidis

<400> 71
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ctacccgttt cacttttac cttgccacta tccctttccc catccgtttc ggcttttacg 180
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tccgccaatg ccagctacca gcgccagccg ccatcgattt cttccacccg cgaaacacag 360
ggatggagcg tgcaggtggg acaaaccttа tttgacgctg ccaaatttgc acaataccgc 420
caaagcaggt tcgatacgca ggctgcagaa cagcgtttcg atgcggcacg cgaagaattg 480
ctgttgaaag ttgccgaaag ttatttcaac gttttactca gccgagacac cgttgccgcc 540
catgcggcgg aaaaagaggc ttatgcccag caggtaaggc aggcgcaggc tttattcaat 600
aaaggtgctg ccaccgcgct ggatattcac gaagccaaag ccggttacga caatgccctg 660
gcccaagaaa tcgccgtatt ggctgagaaa caaacctatg aaaaccagtt gaacgactac 720
accgacctgg atagcaaaca aatcgaggcc atagataccg ccaacctgtt ggcacgctat 780
ctgcccaagc tggaacgtta cagtctggat gaatggcagc gcattgcctt atccaacaat 840
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cagaacagcc gctatcccac cgtttctgcc catgtcggct atcagaataa cctctacact 960
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aaccggctgg aagtaatacg ggcgcggcag gaagtcgccc aagcagaaca gaaactggct 1320
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ttggaaacgg tatttgcgga ataa 1404

<210> 72
<211> 467
<212> PRT
<213> Neisseria meningitidis

<400> 72

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Met Thr Leu Leu Asn Leu Met Ile Met Gln Asp Tyr Gly Ile Ser Val
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Cys Leu Thr Leu Thr Pro Tyr Leu Gln His Glu Leu Phe Ser Ala Met
             20                  25                  30

Lys Ser Tyr Phe Ser Lys Tyr Ile Leu Pro Val Ser Leu Phe Thr Leu
         35                  40                  45

Pro Leu Ser Leu Ser Pro Ser Val Ser Ala Phe Thr Leu Pro Glu Ala
     50                  55                  60

Trp Arg Ala Ala Gln Gln His Ser Ala Asp Phe Gln Ala Ser His Tyr
 65                  70                  75                  80

Gln Arg Asp Ala Val Arg Ala Arg Gln Gln Gln Ala Lys Ala Ala Phe
                 85                  90                  95

Leu Pro His Val Ser Ala Asn Ala Ser Tyr Gln Arg Gln Pro Pro Ser
            100                 105                 110

Ile Ser Ser Thr Arg Glu Thr Gln Gly Trp Ser Val Gln Val Gly Gln
        115                 120                 125

Thr Leu Phe Asp Ala Ala Lys Phe Ala Gln Tyr Arg Gln Ser Arg Phe
    130                 135                 140

Asp Thr Gln Ala Ala Glu Gln Arg Phe Asp Ala Ala Arg Glu Glu Leu
145                 150                 155                 160

Leu Leu Lys Val Ala Glu Ser Tyr Phe Asn Val Leu Leu Ser Arg Asp
                165                 170                 175

Thr Val Ala Ala His Ala Ala Glu Lys Glu Ala Tyr Ala Gln Gln Val
            180                 185                 190

Arg Gln Ala Gln Ala Leu Phe Asn Lys Gly Ala Ala Thr Ala Leu Asp
        195                 200                 205

Ile His Glu Ala Lys Ala Gly Tyr Asp Asn Ala Leu Ala Gln Glu Ile
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210 215 220

Ala Val Leu Ala Glu Lys Gln Thr Tyr Glu Asn Gln Leu Asn Asp Tyr
225 230 235 240

Thr Asp Leu Asp Ser Lys Gln Ile Glu Ala Ile Asp Thr Ala Asn Leu
245 250 255

Leu Ala Arg Tyr Leu Pro Lys Leu Glu Arg Tyr Ser Leu Asp Glu Trp
260 265 270

Gln Arg Ile Ala Leu Ser Asn Asn His Glu Tyr Arg Met Gln Gln Leu
275 280 285

Ala Leu Gln Ser Ser Gly Gln Ala Leu Arg Ala Ala Gln Asn Ser Arg
290 295 300

Tyr Pro Thr Val Ser Ala His Val Gly Tyr Gln Asn Asn Leu Tyr Thr
305 310 315 320

Ser Ser Ala Gln Asn Asn Asp Tyr His Tyr Arg Gly Lys Gly Met Ser
325 330 335

Val Gly Val Gln Leu Asn Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser
340 345 350

Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln
355 360 365

Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr
370 375 380

Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val
385 390 395 400

Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln
405 410 415

Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val
420 425 430

Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu
435 440 445

Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val
450 455 460

Phe Ala Glu

465

<210> 73
<211> 1404
<212> DNA
<213> Neisseria meningitidis

<400> 73
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ctacccgttt cacttttac cttgccacta tccctttccc catccgtttc ggcttttacg 180
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cagcgtgatg cagtgcgcgc acggcaacaa caagccaagg ccgcattcct tccccatgta 300
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gcccaagaaa tcgccgtatt ggctgagaaa caaacctatg aaaaccagtt gaacgactac 720
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ttggaaacgg tatttgcgga ataa 1404

<210> 74
<211> 467
<212> PRT
<213> Neisseria meningitidis

<400> 74
Met Thr Leu Leu Asn Leu Met Ile Met Gln Asp Tyr Gly Ile Ser Val
1 5 10 15

Cys Leu Thr Leu Thr Pro Tyr Leu Gln His Glu Leu Phe Ser Ala Met
20 25 30

Lys Ser Tyr Phe Ser Lys Tyr Ile Leu Pro Val Ser Leu Phe Thr Leu
35 40 45

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Pro Leu Ser Leu Ser Pro Ser Val Ser Ala Phe Thr Leu Pro Glu Ala
     50                  55                  60

Trp Arg Ala Ala Gln Gln His Ser Ala Asp Phe Gln Ala Ser His Tyr
 65                  70                  75                  80

Gln Arg Asp Ala Val Arg Ala Arg Gln Gln Gln Ala Lys Ala Ala Phe
                 85                  90                  95

Leu Pro His Val Ser Ala Asn Ala Ser Tyr Gln Arg Gln Pro Pro Ser
            100                 105                 110

Ile Ser Ser Thr Arg Glu Thr Gln Gly Trp Ser Val Gln Val Gly Gln
        115                 120                 125

Thr Leu Phe Asp Ala Ala Lys Phe Ala Gln Tyr Arg Gln Ser Arg Phe
    130                 135                 140

Asp Thr Gln Ala Ala Glu Gln Arg Phe Asp Ala Ala Arg Glu Glu Leu
145                 150                 155                 160

Leu Leu Lys Val Ala Glu Ser Tyr Phe Asn Val Leu Leu Ser Arg Asp
                165                 170                 175

Thr Val Ala Ala His Ala Ala Glu Lys Glu Ala Tyr Ala Gln Gln Val
            180                 185                 190

Arg Gln Ala Gln Ala Leu Phe Asn Lys Gly Ala Ala Thr Ala Leu Asp
        195                 200                 205

Ile His Glu Ala Lys Ala Gly Tyr Asp Asn Ala Leu Ala Gln Glu Ile
    210                 215                 220

Ala Val Leu Ala Glu Lys Gln Thr Tyr Glu Asn Gln Leu Asn Asp Tyr
225                 230                 235                 240

Thr Asp Leu Asp Ser Lys Gln Ile Glu Ala Ile Asp Thr Ala Asn Leu
                245                 250                 255

Leu Ala Arg Tyr Leu Pro Lys Leu Glu Arg Tyr Ser Leu Asp Glu Trp
            260                 265                 270

Gln Arg Ile Ala Leu Ser Asn Asn His Glu Tyr Arg Met Gln Gln Leu
        275                 280                 285

Ala Leu Gln Ser Ser Gly Gln Ala Leu Arg Ala Ala Gln Asn Ser Arg
    290                 295                 300
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Tyr Pro Thr Val Ser Ala His Val Gly Tyr Gln Asn Asn Leu Tyr Thr
305 310 315 320

Ser Ser Ala Gln Asn Asn Asp Tyr His Tyr Arg Gly Lys Gly Met Ser
325 330 335

Val Gly Val Gln Leu Asn Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser
340 345 350

Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln
355 360 365

Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr
370 375 380

Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val
385 390 395 400

Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln
405 410 415

Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val
420 425 430

Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu
435 440 445

Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val
450 455 460

Phe Ala Glu
465

<210> 75
<211> 1404
<212> DNA
<213> Neisseria meningitidis

<400> 75
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ctacccgttt cacttttac cttgccacta tccctttccc catccgtttc ggcttttacg 180
ctgcctgaag catggcgggc ggcgcagcaa cattcggctg attttcaagc gtcccattac 240
cagcgtgatg cagtgcgcgc acggcaacaa caagccaagg ccgcattcct tccccatgta 300
tccgccaatg ccagctacca gcgccagccg ccatcgattt cttccacccg cgaaacacag 360
ggatggagcg tgcaggtggg acaaacctta tttgacgctg ccaaatttgc acaataccgc 420

caaagcaggt tcgatacgca ggctgcagaa cagcgtttcg atgcggcacg cgaagaattg 480
ctgttgaaag ttgccgaaag ttatttcaac gttttactca gccgagacac cgttgccgcc 540
catgcggcgg aaaaagaggc ttatgcccag caggtaaggc aggcgcaggc tttattcaat 600
aaaggtgctg ccaccgcgct ggatattcac gaagccaaag ccggttacga caatgccctg 660
gcccaagaaa tcgccgtatt ggctgagaaa caaacctatg aaaaccagtt gaacgactac 720
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ttggaaacgg tatttgcgga ataa 1404

<210> 76
<211> 467
<212> PRT
<213> Neisseria meningitidis

<400> 76

Met	Thr	Leu	Leu	Asn	Leu	Met	Ile	Met	Gln	Asp	Tyr	Gly	Ile	Ser	Val
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Cys	Leu	Thr	Leu	Thr	Pro	Tyr	Leu	Gln	His	Glu	Leu	Phe	Ser	Ala	Met
			20					25					30		

Lys	Ser	Tyr	Phe	Ser	Lys	Tyr	Ile	Leu	Pro	Val	Ser	Leu	Phe	Thr	Leu
		35					40					45			

Pro	Leu	Ser	Leu	Ser	Pro	Ser	Val	Ser	Ala	Phe	Thr	Leu	Pro	Glu	Ala
	50					55					60				

Trp	Arg	Ala	Ala	Gln	Gln	His	Ser	Ala	Asp	Phe	Gln	Ala	Ser	His	Tyr
65					70					75					80

Gln	Arg	Asp	Ala	Val	Arg	Ala	Arg	Gln	Gln	Gln	Ala	Lys	Ala	Ala	Phe
				85					90					95	

Leu	Pro	His	Val	Ser	Ala	Asn	Ala	Ser	Tyr	Gln	Arg	Gln	Pro	Pro	Ser
			100					105					110		

Ile	Ser	Ser	Thr	Arg	Glu	Thr	Gln	Gly	Trp	Ser	Val	Gln	Val	Gly	Gln
		115					120					125			

Thr Leu Phe Asp Ala Ala Lys Phe Ala Gln Tyr Arg Gln Ser Arg Phe
130 135 140

Asp Thr Gln Ala Ala Glu Gln Arg Phe Asp Ala Ala Arg Glu Glu Leu
145 150 155 160

Leu Leu Lys Val Ala Glu Ser Tyr Phe Asn Val Leu Leu Ser Arg Asp
165 170 175

Thr Val Ala Ala His Ala Ala Glu Lys Glu Ala Tyr Ala Gln Gln Val
180 185 190

Arg Gln Ala Gln Ala Leu Phe Asn Lys Gly Ala Ala Thr Ala Leu Asp
195 200 205

Ile His Glu Ala Lys Ala Gly Tyr Asp Asn Ala Leu Ala Gln Glu Ile
210 215 220

Ala Val Leu Ala Glu Lys Gln Thr Tyr Glu Asn Gln Leu Asn Asp Tyr
225 230 235 240

Thr Asp Leu Asp Ser Lys Gln Ile Glu Ala Ile Asp Thr Ala Asn Leu
245 250 255

Leu Ala Arg Tyr Leu Pro Lys Leu Glu Arg Tyr Ser Leu Asp Glu Trp
260 265 270

Gln Arg Ile Ala Leu Ser Asn Asn His Glu Tyr Arg Met Gln Gln Leu
275 280 285

Ala Leu Gln Ser Ser Gly Gln Ala Leu Arg Ala Ala Gln Asn Ser Arg
290 295 300

Tyr Pro Thr Val Ser Ala His Val Gly Tyr Gln Asn Asn Leu Tyr Thr
305 310 315 320

Ser Ser Ala Gln Asn Asn Asp Tyr His Tyr Arg Gly Lys Gly Met Ser
325 330 335

Val Gly Val Gln Leu Asn Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser
340 345 350

Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln
355 360 365

Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr
370 375 380

Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val
385 390 395 400

Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln
405 410 415

Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val
420 425 430

Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu
435 440 445

Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val
450 455 460

Phe Ala Glu
465

<210> 77
<211> 1404
<212> DNA
<213> Neisseria meningitidis

<400> 77
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ctacccgttt cacttttac cttgccacta tccctttccc catccgtttc ggcttttacg 180
ctgcctgaag catggcgggc ggcgcagcaa cattcggctg attttcaagc gtcccattac 240
cagcgtgatg cagtgcgcgc acggcaacaa caagccaagg ccgcattcct tccccatgta 300
tccgccaatg ccagctacca gcgccagccg ccatcgattt cttccacccg cgaaacacag 360
ggatggagcg tgcaggtggg acaaacctta tttgacgctg ccaaatttgc acaataccgc 420
caaagcaggt tcgatacgca ggctgcagaa cagcgtttcg atgcggcacg cgaagaattg 480
ctgttgaaag ttgccgaaag ttatttcaac gttttactca gccgagacac cgttgccgcc 540
catgcggcgg aaaaagaggc ttatgcccag caggtaaggc aggcgcaggc tttattcaat 600
aaaggtgctg ccaccgcgct ggatattcac gaagccaaag ccggttacga caatgccctg 660
gcccaagaaa tcgccgtatt ggctgagaaa caaacctatg aaaaccagtt gaacgactac 720
accgacctgg atagcaaaca aatcgaggcc atagataccg ccaacctgtt ggcacgctat 780
ctgcccaagc tggaacgtta cagtctggat gaatggcagc gcattgcctt atccaacaat 840
catgaatacc ggatgcagca gcttgccctg caaagcagcg gacaggcgct tcgggcagca 900
cagaacagcc gctatcccac cgtttctgcc catgtcggct atcagaataa cctctacact 960
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ttggaaagca gccgtttgaa actgaaatcg accgaaaccg gccaacaata cggcatccgc 1260
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caagcacggt ataaattcat gctggcttat ttgcgcttgg tgaaagagag cgggttaggg 1380

ttggaaacgg tatttgcgga ataa 1404

<210> 78
<211> 467
<212> PRT
<213> Neisseria meningitidis

<400> 78

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Met Thr Leu Leu Asn Leu Met Ile Met Gln Asp Tyr Gly Ile Ser Val
  1               5                  10                  15

Cys Leu Thr Leu Thr Pro Tyr Leu Gln His Glu Leu Phe Ser Ala Met
             20                  25                  30

Lys Ser Tyr Phe Ser Lys Tyr Ile Leu Pro Val Ser Leu Phe Thr Leu
         35                  40                  45

Pro Leu Ser Leu Ser Pro Ser Val Ser Ala Phe Thr Leu Pro Glu Ala
     50                  55                  60

Trp Arg Ala Ala Gln Gln His Ser Ala Asp Phe Gln Ala Ser His Tyr
 65                  70                  75                  80

Gln Arg Asp Ala Val Arg Ala Arg Gln Gln Gln Ala Lys Ala Ala Phe
                 85                  90                  95

Leu Pro His Val Ser Ala Asn Ala Ser Tyr Gln Arg Gln Pro Pro Ser
            100                 105                 110

Ile Ser Ser Thr Arg Glu Thr Gln Gly Trp Ser Val Gln Val Gly Gln
        115                 120                 125

Thr Leu Phe Asp Ala Ala Lys Phe Ala Gln Tyr Arg Gln Ser Arg Phe
    130                 135                 140

Asp Thr Gln Ala Ala Glu Gln Arg Phe Asp Ala Ala Arg Glu Glu Leu
145                 150                 155                 160

Leu Leu Lys Val Ala Glu Ser Tyr Phe Asn Val Leu Leu Ser Arg Asp
                165                 170                 175

Thr Val Ala Ala His Ala Ala Glu Lys Glu Ala Tyr Ala Gln Gln Val
            180                 185                 190

Arg Gln Ala Gln Ala Leu Phe Asn Lys Gly Ala Ala Thr Ala Leu Asp
        195                 200                 205

Ile His Glu Ala Lys Ala Gly Tyr Asp Asn Ala Leu Ala Gln Glu Ile
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    210                 215                 220

Ala Val Leu Ala Glu Lys Gln Thr Tyr Glu Asn Gln Leu Asn Asp Tyr
225                 230                 235                 240

Thr Asp Leu Asp Ser Lys Gln Ile Glu Ala Ile Asp Thr Ala Asn Leu
                245                 250                 255

Leu Ala Arg Tyr Leu Pro Lys Leu Glu Arg Tyr Ser Leu Asp Glu Trp
            260                 265                 270

Gln Arg Ile Ala Leu Ser Asn Asn His Glu Tyr Arg Met Gln Gln Leu
        275                 280                 285

Ala Leu Gln Ser Ser Gly Gln Ala Leu Arg Ala Ala Gln Asn Ser Arg
    290                 295                 300

Tyr Pro Thr Val Ser Ala His Val Gly Tyr Gln Asn Asn Leu Tyr Thr
305                 310                 315                 320

Ser Ser Ala Gln Asn Asn Asp Tyr His Tyr Arg Gly Lys Gly Met Ser
                325                 330                 335

Val Gly Val Gln Leu Asn Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser
            340                 345                 350

Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln
        355                 360                 365

Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr
    370                 375                 380

Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val
385                 390                 395                 400

Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln
                405                 410                 415

Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val
            420                 425                 430

Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu
        435                 440                 445

Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val
    450                 455                 460

Phe Ala Glu
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465

<210> 79
<211> 1404
<212> DNA
<213> Neisseria meningitidis

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acgccctatt tgcaacatga actattttcg gctatgaaat cctatttttc caaatatatc 120
ctacccgttt cacttttac cttgccacta tccctttccc catccgtttc ggcttttacg 180
ctgcctgaag catggcgggc ggcgcagcaa cattcggctg attttcaagc gtcccattac 240
cagcgtgatg cagtgcgcgc acggcaacaa caagccaagg ccgcattcct tccccatgta 300
tccgccaatg ccagctacca gcgccagccg ccatcgattt cttccacccg cgaaacacag 360
ggatggagcg tgcaggtggg acaaaacctta tttgacgctg ccaaatttgc acaataccgc 420
caaagcaggt tcgatacgca ggctgcagaa cagcgtttcg atgcggcacg cgaagaattg 480
ctgttgaaag ttgccgaaag ttatttcaac gttttactca gccgagacac cgttgccgcc 540
catgcggcgg aaaaagaggc ttatgcccag caggtaaggc aggcgcaggc tttattcaat 600
aaaggtgctg ccaccgcgct ggatattcac gaagccaaag ccggttacga caatgccctg 660
gcccaagaaa tcgccgtatt ggctgagaaa caaacctatg aaaaccagtt gaacgactac 720
accgacctgg atagcaaaca aatcgaggcc atagataccg ccaacctgtt ggcacgctat 780
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ttggaaacgg tatttgcgga ataa 1404

<210> 80
<211> 467
<212> PRT
<213> Neisseria meningitidis

<400> 80
Met Thr Leu Leu Asn Leu Met Ile Met Gln Asp Tyr Gly Ile Ser Val
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Cys Leu Thr Leu Thr Pro Tyr Leu Gln His Glu Leu Phe Ser Ala Met
20 25 30

Lys Ser Tyr Phe Ser Lys Tyr Ile Leu Pro Val Ser Leu Phe Thr Leu
35 40 45

```
Pro Leu Ser Leu Ser Pro Ser Val Ser Ala Phe Thr Leu Pro Glu Ala
     50                  55                  60

Trp Arg Ala Ala Gln Gln His Ser Ala Asp Phe Gln Ala Ser His Tyr
 65                  70                  75                  80

Gln Arg Asp Ala Val Arg Ala Arg Gln Gln Gln Ala Lys Ala Ala Phe
                 85                  90                  95

Leu Pro His Val Ser Ala Asn Ala Ser Tyr Gln Arg Gln Pro Pro Ser
            100                 105                 110

Ile Ser Ser Thr Arg Glu Thr Gln Gly Trp Ser Val Gln Val Gly Gln
        115                 120                 125

Thr Leu Phe Asp Ala Ala Lys Phe Ala Gln Tyr Arg Gln Ser Arg Phe
    130                 135                 140

Asp Thr Gln Ala Ala Glu Gln Arg Phe Asp Ala Ala Arg Glu Glu Leu
145                 150                 155                 160

Leu Leu Lys Val Ala Glu Ser Tyr Phe Asn Val Leu Leu Ser Arg Asp
                165                 170                 175

Thr Val Ala Ala His Ala Ala Glu Lys Glu Ala Tyr Ala Gln Gln Val
            180                 185                 190

Arg Gln Ala Gln Ala Leu Phe Asn Lys Gly Ala Ala Thr Ala Leu Asp
        195                 200                 205

Ile His Glu Ala Lys Ala Gly Tyr Asp Asn Ala Leu Ala Gln Glu Ile
    210                 215                 220

Ala Val Leu Ala Glu Lys Gln Thr Tyr Glu Asn Gln Leu Asn Asp Tyr
225                 230                 235                 240

Thr Asp Leu Asp Ser Lys Gln Ile Glu Ala Ile Asp Thr Ala Asn Leu
                245                 250                 255

Leu Ala Arg Tyr Leu Pro Lys Leu Glu Arg Tyr Ser Leu Asp Glu Trp
            260                 265                 270

Gln Arg Ile Ala Leu Ser Asn Asn His Glu Tyr Arg Met Gln Gln Leu
        275                 280                 285

Ala Leu Gln Ser Ser Gly Gln Ala Leu Arg Ala Ala Gln Asn Ser Arg
    290                 295                 300
```

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Tyr Pro Thr Val Ser Ala His Val Gly Tyr Gln Asn Asn Leu Tyr Thr
305                 310                 315                 320

Ser Ser Ala Gln Asn Asn Asp Tyr His Tyr Arg Gly Lys Gly Met Ser
                325                 330                 335

Val Gly Val Gln Leu Asn Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser
            340                 345                 350

Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln
        355                 360                 365

Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr
    370                 375                 380

Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val
385                 390                 395                 400

Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln
                405                 410                 415

Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val
            420                 425                 430

Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu
        435                 440                 445

Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val
    450                 455                 460

Phe Ala Glu
465
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<210> 81
<211> 1404
<212> DNA
<213> Neisseria meningitidis

<400> 81
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ctacccgttt cacttttac cttgccacta tccctttccc catccgtttc ggcttttacg 180
ctgcctgaag catggcgggc ggcgcagcaa cattcggctg attttcaagc gtcccattac 240
cagcgtgatg cagtgcgcgc acggcaacaa caagccaagg ccgcattcct tccccatgta 300
tccgccaatg ccagctacca gcgccagccg ccatcgattt cttccacccg cgaaacacag 360

ggatggagcg tgcaggtggg acaaacctta tttgacgctg ccaaatttgc acaataccgc 420
caaagcaggt tcgatacgca ggctgcagaa cagcgtttcg atgcggcacg cgaagaattg 480
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gcccaagaaa tcgccgtatt ggctgagaaa caaacctatg aaaaccagtt gaacgactac 720
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caagcacggt ataaattcat gctggcttat ttgcgcttgg tgaaagagag cgggttaggg 1380
ttggaaacgg tatttgcgga ataa 1404

<210> 82
<211> 467
<212> PRT
<213> Neisseria meningitidis

<400> 82

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Met Thr Leu Leu Asn Leu Met Ile Met Gln Asp Tyr Gly Ile Ser Val
  1               5                  10                  15

Cys Leu Thr Leu Thr Pro Tyr Leu Gln His Glu Leu Phe Ser Ala Met
             20                  25                  30

Lys Ser Tyr Phe Ser Lys Tyr Ile Leu Pro Val Ser Leu Phe Thr Leu
         35                  40                  45

Pro Leu Ser Leu Ser Pro Ser Val Ser Ala Phe Thr Leu Pro Glu Ala
     50                  55                  60

Trp Arg Ala Ala Gln Gln His Ser Ala Asp Phe Gln Ala Ser His Tyr
 65                  70                  75                  80

Gln Arg Asp Ala Val Arg Ala Arg Gln Gln Gln Ala Lys Ala Ala Phe
                 85                  90                  95

Leu Pro His Val Ser Ala Asn Ala Ser Tyr Gln Arg Gln Pro Pro Ser
            100                 105                 110

Ile Ser Ser Thr Arg Glu Thr Gln Gly Trp Ser Val Gln Val Gly Gln
        115                 120                 125
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Thr Leu Phe Asp Ala Ala Lys Phe Ala Gln Tyr Arg Gln Ser Arg Phe
130 135 140

Asp Thr Gln Ala Ala Glu Gln Arg Phe Asp Ala Ala Arg Glu Glu Leu
145 150 155 160

Leu Leu Lys Val Ala Glu Ser Tyr Phe Asn Val Leu Leu Ser Arg Asp
165 170 175

Thr Val Ala Ala His Ala Ala Glu Lys Glu Ala Tyr Ala Gln Gln Val
180 185 190

Arg Gln Ala Gln Ala Leu Phe Asn Lys Gly Ala Ala Thr Ala Leu Asp
195 200 205

Ile His Glu Ala Lys Ala Gly Tyr Asp Asn Ala Leu Ala Gln Glu Ile
210 215 220

Ala Val Leu Ala Glu Lys Gln Thr Tyr Glu Asn Gln Leu Asn Asp Tyr
225 230 235 240

Thr Asp Leu Asp Ser Lys Gln Ile Glu Ala Ile Asp Thr Ala Asn Leu
245 250 255

Leu Ala Arg Tyr Leu Pro Lys Leu Glu Arg Tyr Ser Leu Asp Glu Trp
260 265 270

Gln Arg Ile Ala Leu Ser Asn Asn His Glu Tyr Arg Met Gln Gln Leu
275 280 285

Ala Leu Gln Ser Ser Gly Gln Ala Leu Arg Ala Ala Gln Asn Ser Arg
290 295 300

Tyr Pro Thr Val Ser Ala His Val Gly Tyr Gln Asn Asn Leu Tyr Thr
305 310 315 320

Ser Ser Ala Gln Asn Asn Asp Tyr His Tyr Arg Gly Lys Gly Met Ser
325 330 335

Val Gly Val Gln Leu Asn Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser
340 345 350

Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln
355 360 365

Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr
370 375 380

Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val
385 390 395 400

Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln
405 410 415

Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val
420 425 430

Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu
435 440 445

Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val
450 455 460

Phe Ala Glu
465

<210> 83
<211> 1404
<212> DNA
<213> Neisseria meningitidis

<400> 83
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ctacccgttt cacttttac cttgccacta tccctttccc catccgtttc ggcttttacg 180
ctgcctgaag catggcgggc ggcgcagcaa cattcggctg attttcaagc gtcccattac 240
cagcgtgatg cagtgcgcgc acggcaacaa caagccaagg ccgcattcct tccccatgta 300
tccgccaatg ccagctacca gcgccagccg ccatcgattt cttccacccg cgaaacacag 360
ggatggagcg tgcaggtggg acaaacctta tttgacgctg ccaaatttgc acaataccgc 420
caaagcaggt tcgatacgca ggctgcagaa cagcgtttcg atgcggcacg cgaagaattg 480
ctgttgaaag ttgccgaaag ttatttcaac gttttactca gccgagacac cgttgccgcc 540
catgcggcgg aaaaagaggc ttatgcccag caggtaaggc aggcgcaggc tttattcaat 600
aaaggtgctg ccaccgcgct ggatattcac gaagccaaag ccggttacga caatgccctg 660
gcccaagaaa tcgccgtatt ggctgagaaa caaacctatg aaaaccagtt gaacgactac 720
accgacctgg atagcaaaca aatcgaggcc atagataccg ccaacctgtt ggcacgctat 780
ctgcccaagc tggaacgtta cagtctggat gaatggcagc gcattgcctt atccaacaat 840
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cagaacagcc gctatcccac cgtttctgcc catgtcggct atcagaataa cctctacact 960
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cgccaggctt ataccgaaag cggtgcggcg cgttaccaaa tcatggcgca agaacgggtt 1200
ttggaaagca gccgtttgaa actgaaatcg accgaaaccg gccaacaata cggcatccgc 1260
aaccggctgg aagtaatacg ggcgcggcag gaagtcgccc aagcagaaca gaaactggct 1320

caagcacggt ataaattcat gctggcttat ttgcgcttgg tgaaagagag cgggttaggg 1380
ttggaaacgg tatttgcgga ataa 1404

<210> 84
<211> 467
<212> PRT
<213> Neisseria meningitidis

<400> 84

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Met Thr Leu Leu Asn Leu Met Ile Met Gln Asp Tyr Gly Ile Ser Val
  1               5                  10                  15

Cys Leu Thr Leu Thr Pro Tyr Leu Gln His Glu Leu Phe Ser Ala Met
             20                  25                  30

Lys Ser Tyr Phe Ser Lys Tyr Ile Leu Pro Val Ser Leu Phe Thr Leu
         35                  40                  45

Pro Leu Ser Leu Ser Pro Ser Val Ser Ala Phe Thr Leu Pro Glu Ala
     50                  55                  60

Trp Arg Ala Ala Gln Gln His Ser Ala Asp Phe Gln Ala Ser His Tyr
 65                  70                  75                  80

Gln Arg Asp Ala Val Arg Ala Arg Gln Gln Gln Ala Lys Ala Ala Phe
                 85                  90                  95

Leu Pro His Val Ser Ala Asn Ala Ser Tyr Gln Arg Gln Pro Pro Ser
            100                 105                 110

Ile Ser Ser Thr Arg Glu Thr Gln Gly Trp Ser Val Gln Val Gly Gln
        115                 120                 125

Thr Leu Phe Asp Ala Ala Lys Phe Ala Gln Tyr Arg Gln Ser Arg Phe
    130                 135                 140

Asp Thr Gln Ala Ala Glu Gln Arg Phe Asp Ala Ala Arg Glu Glu Leu
145                 150                 155                 160

Leu Leu Lys Val Ala Glu Ser Tyr Phe Asn Val Leu Leu Ser Arg Asp
                165                 170                 175

Thr Val Ala Ala His Ala Ala Glu Lys Glu Ala Tyr Ala Gln Gln Val
            180                 185                 190

Arg Gln Ala Gln Ala Leu Phe Asn Lys Gly Ala Ala Thr Ala Leu Asp
        195                 200                 205
```

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Ile His Glu Ala Lys Ala Gly Tyr Asp Asn Ala Leu Ala Gln Glu Ile
    210                 215                 220

Ala Val Leu Ala Glu Lys Gln Thr Tyr Glu Asn Gln Leu Asn Asp Tyr
225                 230                 235                 240

Thr Asp Leu Asp Ser Lys Gln Ile Glu Ala Ile Asp Thr Ala Asn Leu
                245                 250                 255

Leu Ala Arg Tyr Leu Pro Lys Leu Glu Arg Tyr Ser Leu Asp Glu Trp
            260                 265                 270

Gln Arg Ile Ala Leu Ser Asn Asn His Glu Tyr Arg Met Gln Gln Leu
        275                 280                 285

Ala Leu Gln Ser Ser Gly Gln Ala Leu Arg Ala Ala Gln Asn Ser Arg
    290                 295                 300

Tyr Pro Thr Val Ser Ala His Val Gly Tyr Gln Asn Asn Leu Tyr Thr
305                 310                 315                 320

Ser Ser Ala Gln Asn Asn Asp Tyr His Tyr Arg Gly Lys Gly Met Ser
                325                 330                 335

Val Gly Val Gln Leu Asn Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser
            340                 345                 350

Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln
        355                 360                 365

Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr
    370                 375                 380

Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val
385                 390                 395                 400

Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln
                405                 410                 415

Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val
            420                 425                 430

Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu
        435                 440                 445

Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val
    450                 455                 460
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Phe Ala Glu
465

<210> 85
<211> 1404
<212> DNA
<213> Neisseria meningitidis

<400> 85
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ctacccgttt cacttttac cttgccacta tccctttccc catccgtttc ggcttttacg 180
ctgcctgaag catggcgggc ggcgcagcaa cattcggctg attttcaagc gtcccattac 240
cagcgtgatg cagtgcgcgc acggcaacaa caagccaagg ccgcattcct tccccatgta 300
tccgccaatg ccagctacca gcgccagccg ccatcgattt cttccacccg cgaaacacag 360
ggatggagcg tgcaggtggg acaaacctta tttgacgctg ccaaatttgc acaataccgc 420
caaagcaggt tcgatacgca ggctgcagaa cagcgtttcg atgcggcacg cgaagaattg 480
ctgttgaaag ttgccgaaag ttatttcaac gttttactca gccgagacac cgttgccgcc 540
catgcggcgg aaaaagaggc ttatgcccag caggtaaggc aggcgcaggc tttattcaat 600
aaaggtgctg ccaccgcgct ggatattcac gaagccaaag ccggttacga caatgccctg 660
gcccaagaaa tcgccgtatt ggctgagaaa caaacctatg aaaaccagtt gaacgactac 720
accgacctgg atagcaaaca aatcgaggcc atagataccg ccaacctgtt ggcacgctat 780
ctgcccaagc tggaacgtta cagtctggat gaatggcagc gcattgcctt atccaacaat 840
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cagaacagcc gctatcccac cgtttctgcc catgtcggct atcagaataa cctctacact 960
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caatacgggg ccgccgaagc acagctgacc gcaaccgagc ggcacatcaa actcgccgta 1140
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aaccggctgg aagtaatacg ggcgcggcag gaagtcgccc aagcagaaca gaaactggct 1320
caagcacggt ataaattcat gctggcttat ttgcgcttgg tgaaagagag cgggttaggg 1380
ttggaaacgg tatttgcgga ataa 1404

<210> 86
<211> 467
<212> PRT
<213> Neisseria meningitidis

<400> 86
Met Thr Leu Leu Asn Leu Met Ile Met Gln Asp Tyr Gly Ile Ser Val
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Cys Leu Thr Leu Thr Pro Tyr Leu Gln His Glu Leu Phe Ser Ala Met
20 25 30

Lys Ser Tyr Phe Ser Lys Tyr Ile Leu Pro Val Ser Leu Phe Thr Leu

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         35                  40                  45

Pro Leu Ser Leu Ser Pro Ser Val Ser Ala Phe Thr Leu Pro Glu Ala
     50                  55                  60

Trp Arg Ala Ala Gln Gln His Ser Ala Asp Phe Gln Ala Ser His Tyr
 65                  70                  75                  80

Gln Arg Asp Ala Val Arg Ala Arg Gln Gln Gln Ala Lys Ala Ala Phe
                 85                  90                  95

Leu Pro His Val Ser Ala Asn Ala Ser Tyr Gln Arg Gln Pro Pro Ser
            100                 105                 110

Ile Ser Ser Thr Arg Glu Thr Gln Gly Trp Ser Val Gln Val Gly Gln
        115                 120                 125

Thr Leu Phe Asp Ala Ala Lys Phe Ala Gln Tyr Arg Gln Ser Arg Phe
    130                 135                 140

Asp Thr Gln Ala Ala Glu Gln Arg Phe Asp Ala Ala Arg Glu Glu Leu
145                 150                 155                 160

Leu Leu Lys Val Ala Glu Ser Tyr Phe Asn Val Leu Leu Ser Arg Asp
                165                 170                 175

Thr Val Ala Ala His Ala Ala Glu Lys Glu Ala Tyr Ala Gln Gln Val
            180                 185                 190

Arg Gln Ala Gln Ala Leu Phe Asn Lys Gly Ala Ala Thr Ala Leu Asp
        195                 200                 205

Ile His Glu Ala Lys Ala Gly Tyr Asp Asn Ala Leu Ala Gln Glu Ile
    210                 215                 220

Ala Val Leu Ala Glu Lys Gln Thr Tyr Glu Asn Gln Leu Asn Asp Tyr
225                 230                 235                 240

Thr Asp Leu Asp Ser Lys Gln Ile Glu Ala Ile Asp Thr Ala Asn Leu
                245                 250                 255

Leu Ala Arg Tyr Leu Pro Lys Leu Glu Arg Tyr Ser Leu Asp Glu Trp
            260                 265                 270

Gln Arg Ile Ala Leu Ser Asn Asn His Glu Tyr Arg Met Gln Gln Leu
        275                 280                 285

Ala Leu Gln Ser Ser Gly Gln Ala Leu Arg Ala Ala Gln Asn Ser Arg
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290 295 300

Tyr Pro Thr Val Ser Ala His Val Gly Tyr Gln Asn Asn Leu Tyr Thr
305 310 315 320

Ser Ser Ala Gln Asn Asn Asp Tyr His Tyr Arg Gly Lys Gly Met Ser
325 330 335

Val Gly Val Gln Leu Asn Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser
340 345 350

Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln
355 360 365

Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr
370 375 380

Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val
385 390 395 400

Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln
405 410 415

Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val
420 425 430

Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu
435 440 445

Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val
450 455 460

Phe Ala Glu
465

<210> 87
<211> 1404
<212> DNA
<213> Neisseria meningitidis

<400> 87
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acgccctatt tgcaacatga actattttcg gctatgaaat cctatttttc caaatatatc 120
ctacccgttt cacttttac cttgccacta tccctttccc catccgtttc ggcttttacg 180
ctgcctgaag catggcgggc ggcgcagcaa cattcggctg attttcaagc gtcccattac 240
cagcgtgatg cagtgcgcgc acggcaacaa caagccaagg ccgcattcct tccccatgta 300
tccgccaatg ccagctacca gcgccagccg ccatcgattt cttccacccg cgaaacacag 360

ggatggagcg tgcaggtggg acaaacctta tttgacgctg ccaaatttgc acaataccgc 420
caaagcaggt tcgatacgca ggctgcagaa cagcgtttcg atgcggcacg cgaagaattg 480
ctgttgaaag ttgccgaaag ttatttcaac gttttactca gccgagacac cgttgccgcc 540
catgcggcgg aaaaagaggc ttatgcccag caggtaaggc aggcgcaggc tttattcaat 600
aaaggtgctg ccaccgcgct ggatattcac gaagccaaag ccggttacga caatgccctg 660
gcccaagaaa tcgccgtatt ggctgagaaa caaacctatg aaaaccagtt gaacgactac 720
accgacctgg atagcaaaca aatcgaggcc atagataccg ccaacctgtt ggcacgctat 780
ctgcccaagc tggaacgtta cagtctggat gaatggcagc gcattgcctt atccaacaat 840
catgaatacc ggatgcagca gcttgccctg caaagcagcg gacaggcgct tcgggcagca 900
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caatacgggg ccgccgaagc acagctgacc gcaaccgagc ggcacatcaa actcgccgta 1140
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aaccggctgg aagtaatacg ggcgcggcag gaagtcgccc aagcagaaca gaaactggct 1320
caagcacggt ataaattcat gctggcttat ttgcgcttgg tgaaagagag cgggttaggg 1380
ttggaaacgg tatttgcgga ataa 1404

<210> 88
<211> 467
<212> PRT
<213> Neisseria meningitidis

<400> 88

Met	Thr	Leu	Leu	Asn	Leu	Met	Ile	Met	Gln	Asp	Tyr	Gly	Ile	Ser	Val
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Cys	Leu	Thr	Leu	Thr	Pro	Tyr	Leu	Gln	His	Glu	Leu	Phe	Ser	Ala	Met
		20					25					30			

Lys	Ser	Tyr	Phe	Ser	Lys	Tyr	Ile	Leu	Pro	Val	Ser	Leu	Phe	Thr	Leu
	35					40					45				

Pro	Leu	Ser	Leu	Ser	Pro	Ser	Val	Ser	Ala	Phe	Thr	Leu	Pro	Glu	Ala
50					55					60					

Trp	Arg	Ala	Ala	Gln	Gln	His	Ser	Ala	Asp	Phe	Gln	Ala	Ser	His	Tyr
65					70					75					80

Gln	Arg	Asp	Ala	Val	Arg	Ala	Arg	Gln	Gln	Gln	Ala	Lys	Ala	Ala	Phe
			85					90					95		

Leu	Pro	His	Val	Ser	Ala	Asn	Ala	Ser	Tyr	Gln	Arg	Gln	Pro	Pro	Ser
		100					105					110			

Ile	Ser	Ser	Thr	Arg	Glu	Thr	Gln	Gly	Trp	Ser	Val	Gln	Val	Gly	Gln
	115					120					125				

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Thr Leu Phe Asp Ala Ala Lys Phe Ala Gln Tyr Arg Gln Ser Arg Phe
    130                 135                 140

Asp Thr Gln Ala Ala Glu Gln Arg Phe Asp Ala Ala Arg Glu Glu Leu
145                 150                 155                 160

Leu Leu Lys Val Ala Glu Ser Tyr Phe Asn Val Leu Leu Ser Arg Asp
                165                 170                 175

Thr Val Ala Ala His Ala Ala Glu Lys Glu Ala Tyr Ala Gln Gln Val
            180                 185                 190

Arg Gln Ala Gln Ala Leu Phe Asn Lys Gly Ala Ala Thr Ala Leu Asp
        195                 200                 205

Ile His Glu Ala Lys Ala Gly Tyr Asp Asn Ala Leu Ala Gln Glu Ile
    210                 215                 220

Ala Val Leu Ala Glu Lys Gln Thr Tyr Glu Asn Gln Leu Asn Asp Tyr
225                 230                 235                 240

Thr Asp Leu Asp Ser Lys Gln Ile Glu Ala Ile Asp Thr Ala Asn Leu
                245                 250                 255

Leu Ala Arg Tyr Leu Pro Lys Leu Glu Arg Tyr Ser Leu Asp Glu Trp
            260                 265                 270

Gln Arg Ile Ala Leu Ser Asn Asn His Glu Tyr Arg Met Gln Gln Leu
        275                 280                 285

Ala Leu Gln Ser Ser Gly Gln Ala Leu Arg Ala Ala Gln Asn Ser Arg
    290                 295                 300

Tyr Pro Thr Val Ser Ala His Val Gly Tyr Gln Asn Asn Leu Tyr Thr
305                 310                 315                 320

Ser Ser Ala Gln Asn Asn Asp Tyr His Tyr Arg Gly Lys Gly Met Ser
                325                 330                 335

Val Gly Val Gln Leu Asn Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser
            340                 345                 350

Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln
        355                 360                 365

Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr
    370                 375                 380
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Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val
385 390 395 400

Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln
405 410 415

Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val
420 425 430

Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu
435 440 445

Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val
450 455 460

Phe Ala Glu
465

<210> 89
<211> 1404
<212> DNA
<213> Neisseria meningitidis

<400> 89
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acgccctatt tgcaacatga actattttcg gctatgaaat cctatttttc caaatatatc 120
ctacccgttt cacttttac cttgccacta tccctttccc catccgtttc ggcttttacg 180
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caaagcaggt tcgatacgca ggctgcagaa cagcgtttcg atgcggcacg cgaagaattg 480
ctgttgaaag ttgccgaaag ttatttcaac gttttactca gccgagacac cgttgccgcc 540
catgcggcgg aaaaagaggc ttatgcccag caggtaaggc aggcgcaggc tttattcaat 600
aaaggtgctg ccaccgcgct ggatattcac gaagccaaag ccggttacga caatgccctg 660
gcccaagaaa tcgccgtatt ggctgagaaa caaacctatg aaaaccagtt gaacgactac 720
accgacctgg atagcaaaca aatcgaggcc atagataccg ccaacctgtt ggcacgctat 780
ctgcccaagc tggaacgtta cagtctggat gaatggcagc gcattgcctt atccaacaat 840
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ttggaaacgg tatttgcgga ataa 1404

<210> 90
<211> 467
<212> PRT
<213> Neisseria meningitidis

<400> 90

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Met Thr Leu Leu Asn Leu Met Ile Met Gln Asp Tyr Gly Ile Ser Val
  1               5                  10                  15

Cys Leu Thr Leu Thr Pro Tyr Leu Gln His Glu Leu Phe Ser Ala Met
             20                  25                  30

Lys Ser Tyr Phe Ser Lys Tyr Ile Leu Pro Val Ser Leu Phe Thr Leu
         35                  40                  45

Pro Leu Ser Leu Ser Pro Ser Val Ser Ala Phe Thr Leu Pro Glu Ala
     50                  55                  60

Trp Arg Ala Ala Gln Gln His Ser Ala Asp Phe Gln Ala Ser His Tyr
 65                  70                  75                  80

Gln Arg Asp Ala Val Arg Ala Arg Gln Gln Gln Ala Lys Ala Ala Phe
                 85                  90                  95

Leu Pro His Val Ser Ala Asn Ala Ser Tyr Gln Arg Gln Pro Pro Ser
            100                 105                 110

Ile Ser Ser Thr Arg Glu Thr Gln Gly Trp Ser Val Gln Val Gly Gln
        115                 120                 125

Thr Leu Phe Asp Ala Ala Lys Phe Ala Gln Tyr Arg Gln Ser Arg Phe
    130                 135                 140

Asp Thr Gln Ala Ala Glu Gln Arg Phe Asp Ala Ala Arg Glu Glu Leu
145                 150                 155                 160

Leu Leu Lys Val Ala Glu Ser Tyr Phe Asn Val Leu Leu Ser Arg Asp
                165                 170                 175

Thr Val Ala Ala His Ala Ala Glu Lys Glu Ala Tyr Ala Gln Gln Val
            180                 185                 190

Arg Gln Ala Gln Ala Leu Phe Asn Lys Gly Ala Ala Thr Ala Leu Asp
        195                 200                 205
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Ile His Glu Ala Lys Ala Gly Tyr Asp Asn Ala Leu Ala Gln Glu Ile
210 215 220

Ala Val Leu Ala Glu Lys Gln Thr Tyr Glu Asn Gln Leu Asn Asp Tyr
225 230 235 240

Thr Asp Leu Asp Ser Lys Gln Ile Glu Ala Ile Asp Thr Ala Asn Leu
245 250 255

Leu Ala Arg Tyr Leu Pro Lys Leu Glu Arg Tyr Ser Leu Asp Glu Trp
260 265 270

Gln Arg Ile Ala Leu Ser Asn Asn His Glu Tyr Arg Met Gln Gln Leu
275 280 285

Ala Leu Gln Ser Ser Gly Gln Ala Leu Arg Ala Ala Gln Asn Ser Arg
290 295 300

Tyr Pro Thr Val Ser Ala His Val Gly Tyr Gln Asn Asn Leu Tyr Thr
305 310 315 320

Ser Ser Ala Gln Asn Asn Asp Tyr His Tyr Arg Gly Lys Gly Met Ser
325 330 335

Val Gly Val Gln Leu Asn Leu Pro Leu Tyr Thr Gly Gly Glu Leu Ser
340 345 350

Gly Lys Ile His Glu Ala Glu Ala Gln Tyr Gly Ala Ala Glu Ala Gln
355 360 365

Leu Thr Ala Thr Glu Arg His Ile Lys Leu Ala Val Arg Gln Ala Tyr
370 375 380

Thr Glu Ser Gly Ala Ala Arg Tyr Gln Ile Met Ala Gln Glu Arg Val
385 390 395 400

Leu Glu Ser Ser Arg Leu Lys Leu Lys Ser Thr Glu Thr Gly Gln Gln
405 410 415

Tyr Gly Ile Arg Asn Arg Leu Glu Val Ile Arg Ala Arg Gln Glu Val
420 425 430

Ala Gln Ala Glu Gln Lys Leu Ala Gln Ala Arg Tyr Lys Phe Met Leu
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Ala Tyr Leu Arg Leu Val Lys Glu Ser Gly Leu Gly Leu Glu Thr Val
450 455 460

Phe Ala Glu
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